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THE TRUTH AND THE TRUTH ONLY ON EVERY PAGE FROM COVER TO COVER

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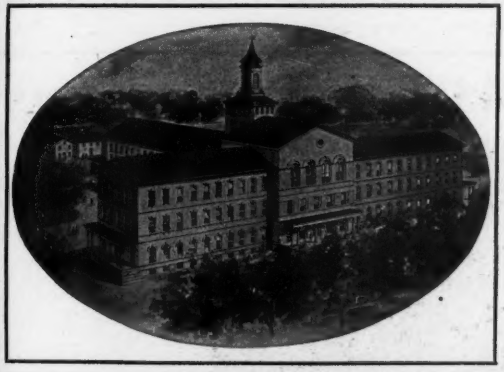

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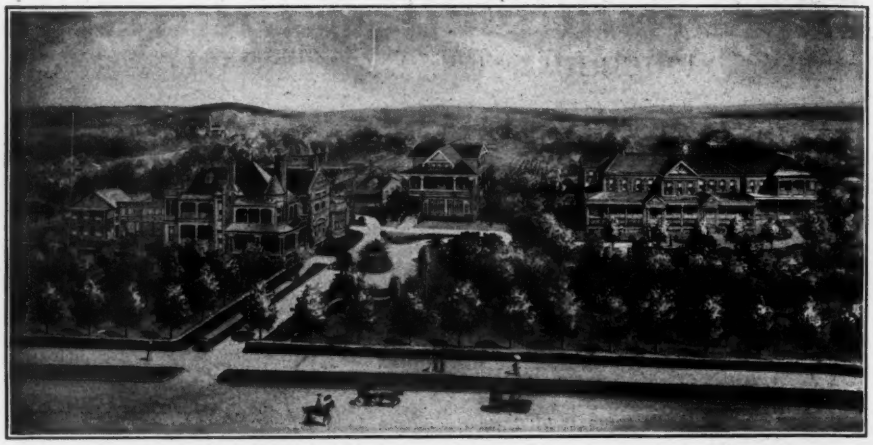

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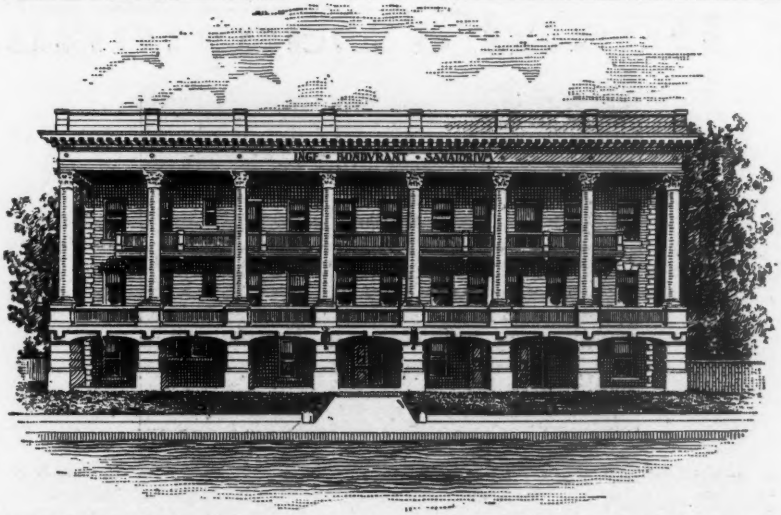

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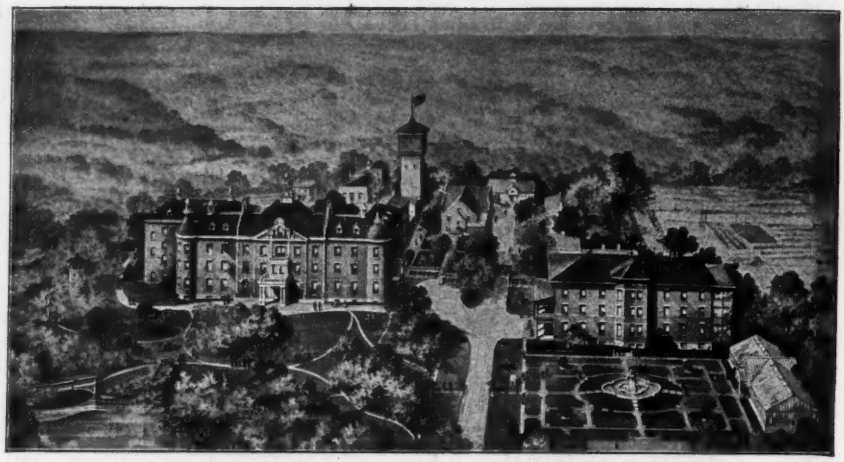

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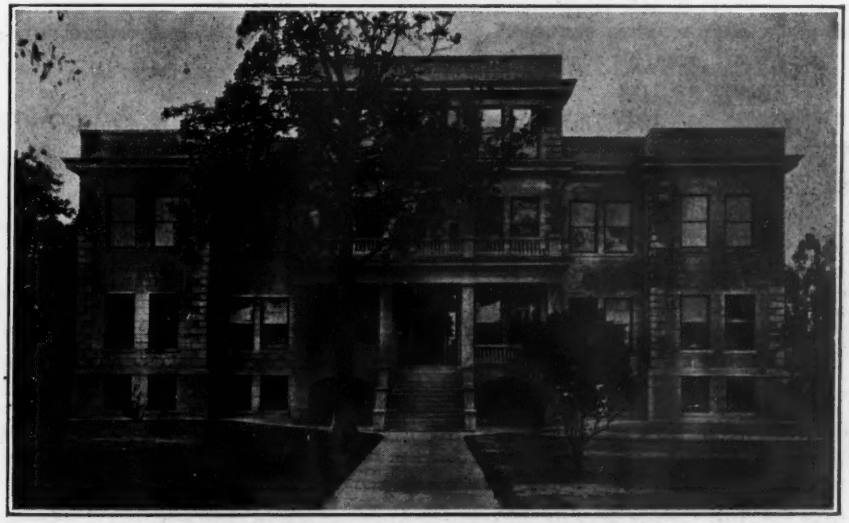

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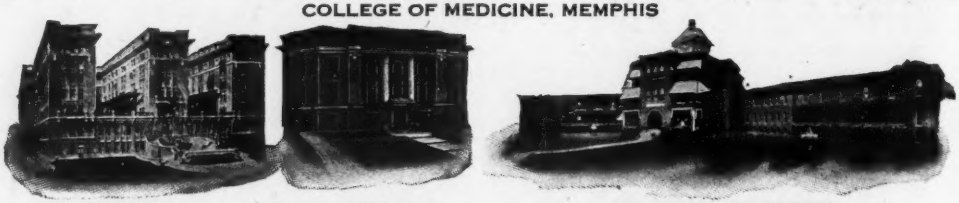

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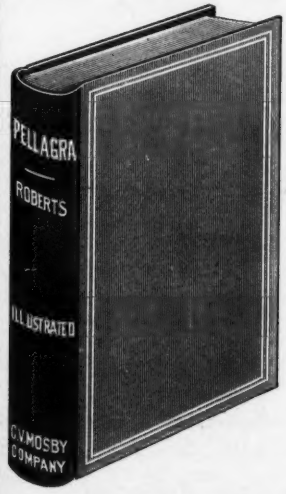

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ORIGINAL ARTICLES

VACCINE THERAPY A DEFINITE SURGICAL ADJUNCT.*

By W. W. CRAWFORD, B.Sc., M.Ph., M.D.,
Hattiesburg, Miss.

This paper makes no pretense at a technical discussion of vaccines. It shall be our object rather to briefly present some clinical points that have been largely the outgrowth of personal observation, covering a period of more than three years in our work at the South Mississippi Infirmary.

It is our conviction that the discovery of Wright has been the most valuable one recorded in medicine for many years. He has opened the door for successful activity in a field that has hitherto been the nightmare of medical man and surgeon alike—a discovery that is already revolutionizing septic surgery.

Vaccines commend themselves to us primarily and in a negative sense in that their administration need not interfere with any older or better recognized treatment. It was this negative virtue, coupled with an urgent need for a better method of handling our septic cases, that prompted us in the extensive use of vaccines. We have exhibited this treatment in almost every class of cases in which pyogenic organisms are a factor, and with a few exceptions our results have been most gratifying.

Feeling as we do that every patient in whom we have even presumptive evidence of infection can be benefited by vaccines, the main question that we consider is the dosage and interval of administration.

The strictly scientific way of determining the proper dose of any given vaccine and the frequency with which it should be repeated, is by finding the opsonic index of the individual in question, but the technique of that procedure is so complex and intricate that it is at once impractical to the average doctor. I know that some laboratory men will tell you that it is a test of sufficient simplicity to warrant at least one man in even small centers having it at his command, but those of us whose work is away from the large city know that such a contention is not always true.

In order that any therapeutic measure may witness a maximum of efficiency, the conditions that attend its application should be reduced to the greatest possible degree of simplicity. We should all be good clinicians, and in order to reach the highest degree of attainment in a practical way, our bedside observation should be reinforced, but rarely superseded by the laboratory.

We readily doff our hats to the microscopic report that tells us early that a given throat lesion is due to the Klebs-Loeffler bacillus, but in the use of antitoxin for the patient we are guided solely by the impression that each injection makes on the clinical aspect of the case.

So it is in the use of vaccines. We are pleased to find that a given infection of the pelvis, we will say, is due to a definite organism. Having determined this point, we believe that the careful observer can administer the specific vaccine with almost the same

*Read before the Southern Medical Association at Hattiesburg, Miss., November 14-17, 1911.

exactness by watching the symptom complex, as when he takes the opsonic reading as his guide.

Synott, in the Medical Record for October 14, we think aptly sums up the situation when he says:

"The opsonic index, when estimated by a careful and well-trained laboratory worker, although perhaps not mathematically exact, is a valuable guide to dosage and the proper interval between inoculations. The opsonic technique, however, is difficult to acquire. Special and expensive laboratory apparatus is necessary, and considerable experience and skill are essential if reliable results are sought. It also consumes time, each estimation requiring at least half an hour. Many successful investigators are beginning to dispense with it except as an occasional confirmatory control. Some vaccine therapists have become so expert that they have discarded blood examinations altogether and rely entirely upon the careful study of the clinical signs as a more valuable indicator for dosage.

"Prominent among the inoculators who are discarding the opsonic index as a guide to dosage is Dr. W. D'Este Emery, a very well-known English immunizator and author. His plan is to watch the clinical symptoms carefully and to use gradually increasing doses until large amounts are given. He believes his results have been better since he adopted this procedure than when he depended upon the opsonic index as his guide. In a recent letter to the author of this paper he writes: 'I think we have now reached the stage in vaccine therapy similar to that to which we have passed in the use of tuberculin.' No one who has used both the opsonic method and the method of gradually increasing the dose until large amounts are given, is likely to stick to the former."

Just as the profession administered antitoxin with becoming timidity until its limitations had been learned, so the profession today is feeling its way cautiously and with no small degree of skepticism in the use of vaccines. This lack of faith is, we believe, partly responsible for the adverse reports that are being heard from many sources. One who administers the remedy without proper confidence is prone to give fewer and smaller doses than are necessary to obtain therapeutic results. Almost without exception the failures that have been chronicled in our literature have been coupled with minimum doses indifferently administered.

The failure to recognize the type of organism present is oftentimes responsible for negative results. Again there may be, and often is, more than one organism, and unless a mixed bacterin is administered, of course the treatment will not be attended with success.

The idea obtains in the minds of some practitioners that if vaccine has any merit at all, the injection of any strain of bacteria ought to increase the antibodies and opsonic content and thereby increase the resistance of the patient regardless of its identity with the specific germ that is responsible for the infection, failing, of course, to recognize the basic principle of vaccine therapy, that the emulsion of dead bacteria can only stimulate the formation of opsonins for living bacteria of the same variety.

Much has been written as to the relative merits of autogenous and stock vaccines. If one's facilities make it practical to prepare autogenous vaccine, the most reasonable opinion would be that he ought to secure better results from this than from the commercial product. On the other hand, numbers of inoculators who have given both preparations a thorough trial, claim that in the average case stock vaccines are entitled to the same degree of confidence as those prepared from the patient under treatment. The acceptance of this latter statement tends to further simplyfying and popularizing the treatment. Our own activity has been confined to stock vaccines.

In the administration of the remedy to the average case it is our custom to give 50,000,000

dead bacteria the first day, 100,000,000 the second day, 200,000,000 the third day and 400,000,000 the fourth day. Ordinarily some impression has been made by that time, and the 400,000,000 dose may be continued at longer intervals than twenty-four hours, say from two to five days. The length of time that we should persist in this treatment should, of course, be determined by the progress of each case. We have had a number of cases in which it has been necessary to inoculate the patient only on two successive days. On the other hand, we have a patient under our care now that has had vaccine at intervals for almost two years. The case is one of double pyelitis, due to the colon bacillus. Patient has an occasional chill followed by a temperature of perhaps 103 degrees, suffers with intense headache, nausea and pain in kidney, usually only one at a time. A free discharge of pus a day or two after outset affords relief for a few weeks.

We have given her several courses of a dozen inoculations of 400,000,000 at intervals of two to five days. While treatment has not cured, it has afforded much comfort and prolonged the intervals between attacks to several months instead of as many weeks.

There are very few cases that require prolonged treatment. In fact, most of the patients represent acute manifestation and need have less than half a dozen inoculations.

In contradistinction to the above obstinate case, we submit the following report of an interesting gall bladder case.

Mrs. A., age 30, a frail-looking little woman, with negative personal history, developed a chill, followed by an abrupt rise of temperature. During the subsequent three weeks she had from one to four chills daily, with a temperature curve ranging from 96 to 104½. On admission at 10:20 a. m. last July she had pulse 100, respiration 20, temperature 104. Blood examination for malaria and typhoid negative. Leucocyte count six thousand. Lungs negative; no tenderness about body except over gall bladder, and that was not marked. No jaundice, no bile pigment in urine. At 4 p. m. her pulse was 88, respiration 18, temperature 98 3-5. Had chill at 8 p. m., after which her pulse was 100, respiration 18, temperature 104 1-5. At midnight pulse 88, respiration 18, temperature 96 4-5. Had chill at 6 a. m., pulse 88, respiration 18, temperature 104 2-5. At 10:40 a. m., pulse 100, respiration 18, temperature 96 4-5. Had another chill at 5 p. m., pulse 102, respiration 22, temperature 104 2-5. At 8 p. m., pulse 88, respiration 22, temperature 98 1-5.

The following three days were characterized by frequent chills, high temperature and subnormal drops. On the fourth day after her admission we became convinced, largely by the "steeple chart," as suggested by Moynihan, that gall bladder infection was the undoubted cause of her fever. The colon bacillus being the most probable infecting agent, a hypodermic of 200,000,000 dead colon bacilli were given at 10 a. m., followed at 4 p. m. the next day with 400,000,000.

Temperature rose to 101 the first day, without chill, then promptly returned to normal. Tenderness in gall bladder rapidly disappeared and patient had no further recurrence. Was dismissed from institution one week after treatment was begun.

In appendicitis there are those who follow the dictum—operate when patient is first seen, regardless of the stage. We do not subscribe to this plan, but feel that those who do follow it will find that the liberal use of colon bacilli and strepto bacteria will be of especial value in that class of cases.

All of us know that the patient's resistance is lowest and his opsonic content is at its minimum of efficiency during a certain stage, notably about the third or fourth day. Not only is this true, but the organisms seem to be at their highest degree of virulence at this time. If one feels then that he must operate at this stage, he will find liberal doses of vaccine a most gratifying adjunct to his knife.

We have had case after case of appendicitis, with a tumor leucocytosis, high temperature, and all the classic symptoms of pus pass rapidly and satisfactorily either into the cold stage, where simple drainage or drainage with the removal of the appendix became possible without the dangers that usually attend the latter procedure, or, where the amount of pus was small, have an uneventful convalescence without drainage.

Do not misunderstand us. We do not mean to convey the idea that in appendicitis we can disregard every element in the symptom complex and pin our faith to vaccines, feeling sure that the patient can be carried safely into the operative period where surgery will be attended with the same percentage of recovery as in an interval operation. We know that an immediate operation, however late, is at once the best, as it is the only way to treat perforative appendicitis with its attendance free pus in the abdomen. We are confident, however, that a major portion of these cases that present themselves to us, after the conventional twenty-four-hour period, will yield gratifying results if vaccine is given in proper dosage.

Let us relate a case: S., age 26, admitted 5:30 p. m., June 24, 1910, fifth day of attack, with pulse 88, temperature 101. There was an extensive mass in right iliac fossa; tongue was brown and dry; symptom complex indicated the presence of pus. Temperature that afternoon was 103. Fifty million dead colon bacilli given at 8 a. m. Fifty million strepto bacterin given at 6:30 p. m. One hundred million colon bacilli given at noon the following day. Temperature then was 101 1-5. One hundred million strepto bacterin given at 6 p. m. the same day. Temperature at 6 a. m. the following morning 98 2-5, and remained either normal or about one degree sub-normal until the 5th, when operation was made, ten days after admission. In the meantime tumor in side had become much smaller, patient's tongue had become clean and he felt so well that to his mind his enforced rest was unnecessary. On July 5 we operated and drained a large quantity, perhaps ten ounces of sterile pus; extensive adhesions were liberated and appendix was removed. Patient made an uneventful recovery without post-operation rise of temperature. We were enabled to do with perfect safety an extensive operation that ten days earlier would have been perilous.

Again, October 26 last, a boy of 17 was admitted at 5 p. m., with pulse 112, temperature 101, tumor in right iliac fossa. Third day of attack 50,000,000 colon bacilli given. Following afternoon temperature was normal, 100,000,000 colon bacilli given. Temperature remained normal and tumor reduced in size until November 1, when operation was performed. Appendix was found full of pus.

In acute perforative appendicitis, if patient is operated early, liberal doses of vaccine aid nature's efforts, but after the patient has become overwhelmed with toxines he, of course, loses his capacity to manufacture opsonins, no matter what the stimulus. In such cases vaccine may actually damage the patient by temporarily lowering his vitality.

One last word in regard to appendicitis. I would not try to have you forget the fact that there is no surgical condition in which the personal equasion enters so largely as in the management of this particular disease, and while we have for a long time used colon bacillus and strepto bacterin in its treatment, yet we would not try to get away from the fact that in its final analysis it is strictly a surgical disease, and that whatever agencies we may bring to our aid in its management must be subsidiary to the one central thought that the knife is the only panacea.

In acute salpingo-oophoritis and pelvic peritonitis appropriate vaccines find a special field of usefulness. A number of these cases have come to us with high temperature and marked acceleration of pulse and have yielded promptly to ascending doses of vaccines.

One of these patients presented an interesting complication. Briefly her history is as

follows: Age 38, married twelve years, eleven years had abortion, followed by some septic manifestations that left her with crippled ovaries and tubes. No pregnancy since that date. One week prior to admission in infirmary missed one menstrual period. About this same date developed pelvic peritonitis, in which the right ovary and tube were the storm center. Temperature on admission was 102. She was given ascending doses of Neisser bacterin covering a period of three weeks. Temperature returned to normal, tenderness gradually subsided, leaving a palpable mass in pelvis. Four weeks after beginning treatment operation was done. Left ovary was size of large cocoanut and filled with pus. Right ovary was 2½ inches in diameter and contained in its center a foetus of about six weeks or two months' growth. A number of cases of pelvic infection of puerperal origin or in non-pregnant women with specific infection have yielded most gratifying results when treated by this plan.

The following case, although a medical one, will emphasize what I want to say in regard to large and frequently repeated doses of vaccine. Boy, age 5, developed a cold with temperature last March. Continued to have a temperature from 100 to above 103 for three months in spite of climatic as well as other treatment. When we saw him, June 23 last, he was much reduced in weight, had temperature of 103; leucocyte count of 22,000; left lung was almost completely consolidated; sputum showed no tubercle bacilli, but myriads of streptococci.

5 million strepto bacterin were given the 1st day.
10 million strepto bacterin were given the 2d day.
15 million strepto bacterin were given the 3d day.
20 million strepto bacterin were given the 6th day.

Vaccine was discontinued on this date, temperature having returned to normal. It remained so for eight days, when it rose to 100; then rose gradually until three days later, when it reached 102½. Second day after temperature came up 25,000,000 were given. Fifth day thereafter no reduction in fever was experienced, when second dose of 25,000,000 was given without results. We then gave 55,000,000, 100,000,000, 150,000,000. Some improvement. Dose was increased to 200,000,000, 300,000,000 and 400,000,000 before temperature subsided. When dose reached 400,000,000, temperature again came to normal for a part of each day, with rise of a degree or a degree and a half in the afternoon. Three hundred million was administered every fourth day thereafter for four weeks. Temperature ranged during this time from normal to 100. Patient gained steadily; in four weeks after beginning large doses patient had gained six pounds, had good color and lung had cleared up to a marked degree. Improvement has been continuous and boy weighs today, four months after beginning treatment, more than at any time before his illness. This brief report is given because it emphasizes two points: First, that large doses may be given, even to children, without any unfavorable complications, and, second, because it shows that in relapses after initial treatment much larger doses will be necessary than in those cases where continued treatment covers a period of several weeks. We made the mistake of presuming, in view of the fact that the temperature remained normal for a few days, and sputum became free from germs, and boy felt much improved, that all of the organisms in the lung had been destroyed, and therefore that further treatment was not indicated. Had we persisted in our 25,000,000 or 50,000,000 doses for two or three weeks we would probably have accomplished a cure much earlier and have obviated the necessity of larger doses.

In conclusion we would emphasize the statement that we do not claim that vaccines should supplant other forms of treatment, but, as the title of the paper indicates, they should be a definite adjunct. And we believe that in less than another decade the internist would be considered just as consistent in treating diphtheria without antitoxin as the surgeon would be in disregarding the efficacy of vaccines in his septic cases.

We can only expect results in those cases where nature is making a fairly good fight unaided. Vaccines under those conditions reinforce nature by stimulating the production of opsonins, antibodies and antitoxins.

If there is a decided bacteriaemia, with practically no leucocytic reaction, vaccines probably hinder rather than help.

We believe doses should be larger and the interval of administration shorter than is being taught today.

DISCUSSION.

Dr. Maes.—Mr. Chairman, we have had several epoch-making discoveries in therapeutics. I still remember the adoption of tuberculin, when we thought we had a panacea, and then vaccines (Wright's) and we thought we were going to cure everything, and the surgeon saw his fees glimmering—everything was to be cured by vaccines. Then a couple of years ago Ehrlich's discovery (606) and we thought we had a panacea for syphilis, and we now find, from personal experience, that every one of these things has been upset.

With regard to vaccine and personal experience, I have tried it on hundreds of cases of types of infection, and I would like to go a step further than Dr. Hume, and say that in quite a large series of cases I fail to see any benefit from vaccines, except, possibly, in surgical tuberculosis. In looking over Dr. Crawford's paper in some detail, we find that he confines himself to the appendix, gall bladder, and in one instance pyelitis. Look into the history of these conditions, and you will find that every one of them are subject to exacerbation and remissions. We know of the localized peritoneal abscess which fails to give us any constitutional disturbance, or either rise of temperature or pulse. How can we be sure of our control in the way of abscess. I think the mistaken evidence in many of these cases is due to lack of control, because many patients would have gotten well, or just as well without the use of vaccine, as is the history of many infections by the colon bacillus.

One more thing that I want to say, and I will be done, and that is, as to the temperature or fever and some constitutional disturbance in tuberculosis. Dr. Crawford said that it was due to mixed infection. I don't know whether I am right in challenging Dr. Crawford's paper in this record, because the work was too recent, but the work of Krauss and Baldwin at Saranac will tend to show that it is not due to mixed infection, but it is due to local anaphylaxis and the liberation of split proteins, which cause constitutional disturbances.

There is no reason why the microbe organism should be accused of causing constitutional disturbances. It is absolutely a question of split proteins, and it is absolutely proved that tuberculosis, that is, surgical tuberculosis, will be cured or given relief even where there is mixed infection, without a great rise of temperature, and where we get the anaphylactic reaction in a great many of its manifestations.

Dr. Sledge, of Mobile.—I am interested in this work myself, and I must agree with him to a certain extent as to the results that we get in this form of therapeutics, and can hardly conceive of any man that thoroughly understands the principle on which vaccine in therapeutics is based, condemning it without giving the matter further trial—not so much on venereal cases, in which almost everyone of us has had some experience before we heard of vaccine.

Dr. Crawford's paper and the discussion by Dr. Hume and Dr. Maes is very interesting to me, as it must be to all of you present. This is especially true in my case, as I have directed no little of my attention to this side of therapeutics and have met with very encouraging results where fortune has not favored the gentlemen who preceded me in this discussion. As Dr. Crawford has so aptly brought out, vaccine-therapy is an adjunct to surgery, not a substitute. This treatment is not indicated in every case of bacterial invasion, but only where the infection persists through the inability of the body-forces to reach focus of infection. The whole principle of vaccine-therapy depends on the theory of active acquired immunity, and this has stood the test of time. Vaccines are not indicated in a general bacteraemia, for here we already have at hand the condition we wish to bring about by the injection of dead or attenuated organisms; hence I am opposed to the use of typho-bacterin in the treatment of typhoid fever where the bacilli are free in the blood. A bacteraemia calls for an antitoxic serum, a localized infection for a vaccine. With the principles involved understood, I cannot conceive of any one wishing to go on record as a biologic-therapeutic nihilist. The opsonic index reading is ideal, but not necessary in treatment; for in the cases where vaccines are indicated clinically, long study teaches us that the opsonic-index is invariably low. I believe in the use of large doses; a good working table can be gotten from any new work on treatment. The interval between doses should be from three to four days and the doses should be ascending. This is because of an increasing positive phase and not a negative phase; this we have learned from a study of the opsonic-index. In the formation of opsonins, agglutinins and bacteriolysins, and antitoxins the body forces must not be strained or results are poor. Autogenous vaccines are unquestionably better than the stock products; the reason for this is apparent in the variation in the different strains of the same species of bacteria. I have gotten most excellent results with carbuncles, furuncles, pyelitis, and bad septic cases with a negative blood culture. Many of the failures of others must be based on the use of stock bacterins, failure to identify the offending organisms, and improper administration. In some conditions the effect is not encouraging, notably in the venereal diseases. But I think vaccine-therapy is here to stay, and yet to obtain results and do no harm it must be used with the greatest care; no man is ever justified in carelessness in handling biologic remedies. My own results have been so very remarkable to me that I must confess to almost being a fanatic on this subject.

Dr. Elkourie.—I wish to say that my experience in vaccine therapy has been very, very sad; just the opposite of the very elegant paper that I had the pleasure of listening to just now. There is a

particular point in the doctor's paper that I would like for the attention of the association to be called to, and that is the use of vaccine prior to operation for appendicitis. It seems to me that even with those who are faithful to the last degree to the theory of vaccine—particularly those who admit the fact that vaccines do not remove the cause, and do not eliminate the temperature, so to speak, it would be at least a good practice to remove the cause first, and use vaccine adjunctly. In other words, if the vaccine does the good which it has been elaborated upon that it does, it occurs to me that we would do better to first remove the seat of the trouble, and then use the vaccine to assist vitality. I can see no possible reason why we should use the vaccine first, and endanger the life of the patient and prior to operation, four or five days, purely to demonstrate a hypothesis.

In the paper of the doctor, while it is very good and no doubt, à good deal of it is built upon faith, and faith is a good thing, yet we must confess it is purely a hypothetical paper. There is no positive assertion, and there is nothing in it that indicates positive results. Those drops in temperature are all daily symptoms; you see them in every form of infection, and I do not see anything in that to warrant anybody in this room to use vaccine, possibly with a few exceptions. I will limit myself to only one—venereal antitoxin. I have gone back time and again from the old zinc sulphide to permanganate of potash, and have always been able to get better results than with the vaccine. I have given from 500 up to 2,000—not to 500 millimeters, as the doctor said—and have brought my patient from 104 to normal without any bad results at all.

Like the doctor who preceded me, I was a great enthusiast, and up to two or three years ago I believed in vaccine, but now you don't find it in my grip; I only order it when the patient wants it. Sometimes the patient wants it, because it is new, and they think there is something in it, but, as a psychological proposition I think that the vaccine will sometimes do good.

Dr. Metcalf, of Mobile.—While I have had some experience with vaccine, it has been from vaccines alone. I have used very little, or practically none, of the stock vaccine. While I cannot say there is no good in it, I agree with Dr. Maes in the cases that have shown the best results, that they have been the bi-chloride. The bi-chloride cases with the best results were called "B-C." Take cases where there is pure culture after operation, with a temperature of 103-104 daily, we would start injecting them from 30 to 40 millimeters the first day, and there would be a decided drop. When I saw cases that way, I have come to the conclusion that there was some good, but I do not confine it to any particular case, or any number of them. Streptococcus I have seen absolutely no result from, and a slight result from staphylococcus. I think it would take a further trial before we can come to any definite conclusion, but at present I still think it is worth a trial, before we condemn it in toto.

Dr. Turner, of Meridian.—The subject of vaccine seems to be growing interesting, and I merely wish to express my experience with it. I have not had a very liberal experience with it, but have had practical use of it in a number of cases of different kinds. I have tried all the vaccines and serums and antitoxins that have come out, and I remember ten years ago I began using streptococcus; we used to carry the serum along and give them a dose, and thought it was the thing to do. I soon quit because my results were not any better. I have seen cases reported by doctors among my friends of remarkable cures. I have heard of wonderful results from the use of it. I have seen it tried in infection and have not seen any more results from it than from hypodermic injection of salt water, and with a few exceptions that might have been coadjutant, I could not say that I have ever seen any results from any vaccines, and I have tried all of them sufficiently to abandon the use of them in expectation of results from them. I think the reasoning sounds good, but the practical results have been very disappointing to me.

Dr. Allen, of New Orleans.—This is a very interesting subject, serum and vaccine. I was not present to hear all of the doctor's paper; I was called out. It encourages us; we are on the right track. The main trouble has been to obtain the vaccine or serum for all—the gonococci and streptococci.

I think we are all of the same opinion, from the present status of our information, but the efforts should be encouraged and we should go further. The difficulty is that the strains of these two families differ so widely and vary so greatly that we are often dealing with a strain different from the one infecting the patient. From my personal experience with infection surgically acquired in my hand, I must say I am particularly in favor of these agents, for they have certainly done me considerable good. I have frequently suffered from infection, and since I have used serums and vaccines, I have avoided much suffering and have shortened the time I would have suffered previously, and it has been that way in some of my cases; but we must not depend too much upon it. We must be vigorous in the use of other agents that we know are curative, and have stood the test in the past.

I think the subject is one that ought to be encouraged in the light of the experiences and benefit we have had from this, as already used before.

Dr. John Rush, of Mobile.—I have listened with great interest to the paper on vaccines. I myself have used the vaccine quite extensively. I think when they first came out, we all hoped that they would do a great deal more than they have done. Of course, we have been disappointed, a great many of us, with the results of vaccine in a great many instances. At the same time, I must say that vaccine in certain conditions is good and beneficial. In cases of eppididymitis and in cases of arthritis the condition is alleviated and the patient recovers much more readily, my experience has been, under tratment by vaccine in conjunction with local treatment than without vaccine.

In regard to the typhoid vaccine, Dr. Peterson, of Mobile—I believe he had a paper before the association—we were doing a little work together on the use of the typhoid vaccine, and collected statistics of cases in which it had been administered and appearance of typhoid after administration of vaccine in cases which had never had the disease.

In fifty-two administrations in the past summer by Dr. von Ezdorf and myself, there was not a case of typhoid which occurred in any case after the administration of vaccine.

Dr. Hume.—I simply want to get on record as regards the value of vaccine in genito urinary diseases, excluding tuberculosis. I think I was one of the first to use vaccines, as adopted by Dr. Bass. I have uesd it in all diseases, and have given it time and again five thousand millimetres at one injection, and it is my earnest conviction that, as we know it at the present time, and know the consequences, that vaccine therapy has not added a single thing to the method of therapeutics.

I have seen a number of cases, varying of course and in basing my remarks on cases here and there, I earnestly feel at the present time, as we know how to use it today, I have seen no improvement—no general improvement—on any series of cases by its use.

FURTHER CONSIDERATION OF PROLAPSED KIDNEY.*

By J. A. CRISLER, M.D.,
Memphis Tenn

Four years ago I expressed my views upon the subject of movable kidney before the Tri-State Medical Association (1) at Memphis, in which I advocated fixation of the kidney for advanced and troublesome cases of prolapsed kidney and recurring Dietl's crisis. The discussion was sharp and decisive and the general consensus of opinion was decidedly against operative procedure. Some of the surgeons of largest experience and physicians as well were opposed to any operation upon the floating kidney except in cases of advanced degeneration of the organ accompanying prolapsus. At that time I advocated and described the fixation operation that I was then doing, with much satisfaction, and which continues in great favor with me. It was my belief then as now that these surgeons were not using correct technique in their operative procedures, hence met with failure or with only partial success, which discouraged them as well as the physicians who had seen the failures, and made them relegate this class of unfortunates to the role of incurable neurasthenics.

I am greatly impressed with the fact that the Southern medical profession is inclined to treat these cases too lightly. Too many of us are all too willing to tell these patients that they are incurable and to place them in sanatoriums for nervous and mental diseases, which means only temporary relief. We are too prone to declare them nervous wrecks and incurables, and a more conscientious, humane way must be sought. I am not going to use the time-honored expression by saying that "if this paper helps you to do so and so, its purpose is fulfilled," but I am going to say to the physicians that if they don't make painstaking diagnoses and careful study of these cases and direct them into sensible channels, whether this be wearing a truss, or operation, or whatever is best for their ultimate well-being, they are not doing their duty. And to the surgeons, if you don't bring them some relief and satisfaction, some other will. A luxation in a joint receives careful adjustment in our hands for the eyes of the world are upon it, and for other reasons. We must not allow ourselves to dismiss a case of movable kidney as incurable.

Please do not let us go to extremes and say that every kidney that is slightly prolapsed below its normal habitat needs an operation for fixation, but it needs treatment or the patient does, before a troublesome prolapse is the result. I maintain that every mobile kidney needs attention. If you can give them relief with a carefully fitting truss, pray do so, but for my part I place trusses in the wastebasket with pessaries. How a truss can press the front wall constantly against the back wall and hold up a kidney accustomed to wide excursions, is a piece of mechanical gymnastics "not in my philosophy." However, if you can give your patient comfort and health by whatever sane means you choose, you are justified. The point is to awaken from our shameful

*Read at the meeting of the Southern Medical Association, Hattiesburg, Miss., November 14-17, 1911.

lethargy and to conscientiously do what's best for these unfortunates and save them from advanced and hopeless neurasthenia and insanity by a patient study of their pathology and a sane reckoning of their future well-being.

C. W. Suckling, who has done much toward pointing out the dangers of neglect in these cases, thinks that many cases end in the insane asylum for want of timely care. He (2) says that "the frequency of suicide when dropped kidney exists is remarkable."

Philip Hicks (3) says "most chronic movable kidneys are probably the seat of some degree of hydronephrosis, not sufficiently acute in its incidence or condition to cause pain. The inevitable "kinking" of the ureter must always, or almost always, produce retention of urine in the kidney pelvis, and the degree of pressure upon renal substance of this retained urine must depend directly upon the degree of ureteric obstruction. The inevitable results of long continued pressure, aided perhaps by some interference with nerve supply and with blood circulation, must be to impair the renal function, and it is probable that many sufferers from this condition live in a state of mild uremia. He further states that he has seen certain cases of marked neurasthenic and minor symptoms in which the "discovery and support of movable kidneys have been followed by most remarkable improvement." These are cases for careful and continued inquiry. "Such inquiry should be upon the broadest lines, conducted with independent intelligence, and the final verdict must depend upon the results of treatment; whilst I am strongly of the opinion that the proper and fittest tribunal can only consist of general practitioners throughout the country."

The diagnosis of movable kidney is not always easy. Indeed, in some cases it is very difficult, but never impossible. Longyear (4), in his book on Nephrocoloptosis, described his method of examining for movable kidney as follows: "First, place the patient on the back with a small pillow under the head, the thighs flexed and heels close to the buttocks. Expose the abdomen and the lower thoracic region. Standing on the left side of the patient, place the tips of the fingers of the right hand in the triangular space in front of the right quadratus lumborum muscle and just below the twelfth rib, and the tips of the left hand in front just below the costal margin of the same side. Direct the patient to take a deep inspiration, allowing the fingers to gently follow the movement of the parietes. When inspiration is full have the patient expire the air completely from the lungs, and as this is being done press —at first gently, then deeply—with the fingers of both hands, approximating them toward each other. At the end of expiration replace the fingers of the left hand with the thumb of the right, continuing deep compression and palpate below for the kidney with the left hand. This will usually dislodge a floating kidney of any degree of displacement so that it can be felt either wholly below the costa margin or partially below. In some cases, however, failure results, owing to the absence of muscular relaxation or limited action of the diaphragm. In others Gerota's capsule may prevent a downward displacement, while permitting free mobility of the kidney toward the median line.

If the foregoing form of examination is negative the lateral position must be tried. Turn the patient on the left side with the right hip showing a little more than a quarter turn; flex both thighs slightly, the right one the most; proceed in the examination technic as described for the dorsal position. This will never fail to bring the loose kidney to the palpating fingers. This important detail in any examination is to bring about as complete muscular relaxation as possible. In investigation of the left side the examiner may find it convenient to stand to the right of the patient, but as one becomes expert this change of position is not necessary. Such an examination may be made without exposure."

Griffith (5) described his method as follows: "The patients are always examined in both the supine and standing positions. By far the best method to detect a movable kidney is with the patient standing. To examine the right kidney have her rest the right foot on some object about six inches high and lean a little to the right side. For the left kidney a corresponding position is assumed. This gives maximum relaxation and full play to the kidney." He does not consider a kidney abnormally movable unless more than half of the organ can be felt. This is a modification of the Goelet method and I quote from these two authors, because among the many who have devised plans for making a thorough diagnosis, I consider theirs most applicable. The method that I use, and which has served me constantly and satisfactorily, is as follows:

I have the patient lying down on the examining table where I first make a hurried examination over the entire abdomen seeking for the tumor. If it cannot be found I ask the patient to take a deep inspiration, and while holding this she is required to sit up and strain downwards. Then fully relax, and if I am examining for the right kidney, I place the thumb of my left hand in the loin and the fingers just beneath the margin of the ribs. During deep pressure the patient is gently placed in the recumbent posture, and with the left hand still in place. I seek for the kidney with the right hand. This procedure is repeated sufficiently often to convince me of the presence or absence of the movable kidney. Where it is sought on the left side, the reverse maneuvers are employed.

Longyear, perhaps, deserves more credit than any investigator in his careful and elaborate study of the subject. He has put a new phase on the etiology, and while I agree with Harris and Hare and Griffith and many others that the bodily conformation has much to do with the dislocation of the kidney, Longyear has certainly been able to demonstrate a factor de novo in the bundle of fasciculi which he has shown to extend from the fatty capsule of the kidney to the interperitoneal posterior surface of the cecum and colon on the right side and the descending colon on the left. He chooses to name this bundle of fibers the nephrocolic ligament. (6) He also emphasizes the attachments of the colon to the duodenum and pylorus. To those of us who have not made as careful a study as he has done, we are led to believe that his enthusiasm has carried him almost into the realm of imagination. Yet to him all credit is due for this new advancement in the anatomy, etiology, pathology and surgery of the part, and it is possible that if we investigate as diligently as he has done, we may finally accept what he says in its entirety. His views harmonize with Glenard's contention, that we can have "enteroptosis without nephroptosis, but never nephroptosis without enteroptosis." To quote from his book on nephrocoloptosis, page 50, he gives the following four causative factors:

"(1) Weak or absent hepatocolic ligament; (2) loose attachment of kidney at its hilum and to Gerota's capsule; (3) strong and short nephrocolic ligament; (4) prolapse of cecum and ascending colon." In an absence of this combination he does not think it possible for a kidney to be displaced except by trauma. His operation is unique, and if we can agree with him entirely in the importance of his nephrocolic ligament, and can have the results equal to his from his operation, it will ultimately be the operation of choice. The principal feature in his operation, aside from the usual care, is to gather together without rupture the separated fibers of his ligament into one mass after going through the structures, including Gerota's capsule. This bundle of fasciculi are drawn through the capsule and fascia together with a part of Gerota's capsule, which passes down with the ligament. The next step is to suture the over-lapping margins of Gerota's capsule under the loop of the ligament. For this purpose he uses the mattress stitch on each side, which is tied under the edge of the

flap. The ligament being still held, Gerota's capsule is now closed with ligatures, after which he uses a silver wire suture, which passes through the transversalis fascia from side to side under the loop of the ligament, which bring the margins of the fascia under and firmly against the tissue of the ligament. He applies a shot to the silver wire as it has been made taut and sees that the suture is in a condition free from any possibility of causing any irritation to the tissue. He is careful to leave no dead spaces or bleeding points and closes the remaining portion of the wound in a careful manner. He now applies a large abdominal pad, comfortably placed so as to fill the abdominal space below the umbilicus without pressure upon the bony projections. He trusts upon this to help hold the kidney in place during violent emesis. After which the patient is kept in bed and upon the right side or back. After the patient gets up he insists upon an abdominal pad being applied with a binder, and great caution be taken as to diet, exercise, etc., for some time to come.

The principal object in this operation is to hold up the kidney in place at the same time the cecum and colon are brought up to a high level by aid of the nephrocolic ligament. He does not think that the ligament should be severed and dispensed with, as the results will be much better if the kidney and colon are all brought up and securely anchored at one time by the use of the ligament.

(6) Charles A. L. Reed utilizes the nephrocolic ligament, but in a different manner. He separates the fatty tunic of the kidney from its prolapsed position with great care, but does not disturb the attachment of the fatty capsule from the fibrous tunic of the kidney. He brings the kidney, with its fatty capsule, intact to the surface, lifting the upper pole of the kidney through the wound. He next wipes away the globular fat from the connective tissue stroma of the fatty capsule by the use of gauze, being careful not to separate the striae in the fat from the fibrous tunic of the kidney. From the upper pole of the kidney where the adipos e tissue is usually absent, he creates friction with a piece of gauze and wipes away all particles of fat. He now reaches up in the wound and wipes away all the remnants of the old fatty capsule from the abdominal wall, leaving the new nest of the kidney free from fat. The kidney is lifted into its new bed without force, where he secures and divides Longyear's nephrocolic ligament about one inch below the lower pole of the kidney and stitches the kidney end of the ligament in the upper margin of the operation wound and he takes the lower detached end of the ligament and stitches it in the lower margin of the operation wound. Thus it is seen that he intends, by the friction, to get some union between the upper pole of the kidney and the uppermost part of the new fossa, where the kidney is to permanently remain and by the lower pole he expects to get enough strength from the nephrocolic ligament to hold it in place while this union is taking place. In utilizing the lower arm of the ligament, he, of course, accomplishes Longyear's purpose in drawing up the cecum and part of the ascending colon.

In my own operation, described four years ago, (1) the principal and only feature was to hold the kidney high against the diaphragm with the least possible trauma to its substance, and in this way I have always succeeded. To rehearse my operative technique lightly, it is as follows: The usual incision is made and the kidney carefully brought up into the wound. Where the fatty capsule is carefully removed from the fibrous tunic, I have always noticed a rather strong attachment that existed between the lower pole of the kidney and the fatty capsule and the band of tissue that extended from the fatty capsule downwards, and I have for years invariably stitched this lower bundle of fat and fasciculi into the lower margin of the wound, and have frequently remarked upon its tendency to retract downward. In stitching this firmly into the lower angle

of my wound, I did so without any knowledge of the importance of the structure dealt with, but because I felt like it held up the retracting tissues and might, in that way, prevent a subsequent pulling down upon the kidney, should no adhesions form. Moreover, this lower structure which we now know as the nephrocolic ligament of Longyear's, contains some bleeding points, and it could be best managed by firmly anchoring it in sight. I now not only swab out all the old fat in the kidney fossa, but with my four fingers press open the tissue toward the liver and against the diaphragm in such a manner as to give the kidney more room in its new position. We always find that this old fossa has been completely filled by fatty tissue and by the caving in of the diaphragm and post-peritoneal tissue, and I have thought it quite necessary to forcibly divulge this space. The next step is to split the fibrous capsule from the upper pole to the center of the convex border of the kidney, and on each side of this incision we will find some right important fasciculi, which I separate an inch or two from the kidney and roll them up under the edge of the fibrous capsule on each side as the parenchyma of the kidney is exposed. Through this thick bundle of tough fasciculi and fibrous tunic on each side of the upper pole of the kidney I pass double mattress sutures of chromicized catgut and anchor them to the external arcuate ligament of the diaphragm and to the highest possible muscular and fascial structures of the upper posterior wall near the vertebrae. When the kidney is replaced it is gently but firmly pushed up into the new fossa, and as the kidney is elevated to its highest point, the sutures are tied not so tight as to cut out the hold that the sutures have on the fibrous tunic and ligaments stumps, but with great care and judgment to get them just tight enough. I make no attempt to anchor the convex surface of the kidney toward its middle, but only in the neighborhood of the upper pole, always peeling back the fibrous tunic more on the posterior surface of the upper pole, as adhesions here will cause a normal position of the kidney to obtain, if it is anchored properly. I next bring the anterior abdominal layer of the sub-peritoneal fascia against the posterior layer of the same fascia, which we now know as Gerota's capsule, stitching this below the lower pole of the kidney so as to form a kind of basket for it and to prevent its dislodgment in case of persistent vomiting. The wound is now closed, and usually a small wick drain is inserted and allowed to remain for a few days. I do not claim any priority for the operation, but speak of it as the operation that I use, as it is doubtless a combination of several operations.

Now, in Reed's method it would seem to me that the loose, fatty capsule being stitched only at the lower pole, would permit the kidney to topple over sideways and thus cause a slight kink in the ureter, because he has not anchored the upper pole at all, but merely depends upon the lower anchoring to hold it in place until adhesions may take place between the fibrous tunic and the upper segment in the new fossa. The same objections hold in considering the kidney part of Longyear's operation. I hope, however, that these objections will not be borne out by the facts, because either operation is easier than mine to perform and there is less danger, in Longyear's operation particularly, in disturbing the kidney structure by undue adhesions.

My results have been satisfactory to me, however, with the operation I have been using.

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Peabody Hotel.

DISCUSSION.

Dr. Gessner.—I think that we are indebted to Dr. Crisler for a very interesting and thorough paper. I had a case recently which illustrated the difficulty of diagnosis. It was a patient who, shortly after a normal delivery, had an acute paroxysm of pain in the hypocardium, and the pain radiated down towards the lumbar region. In that case the symptoms were such that I had reason to susnect something wrong in the gall bladder or the stomach, and it took quite a little time to make the diagnosis complete. We had an examination made of the stomach contents, which proved negative. An examination of the feces for occult blood was perfectly negative. An X-ray was made to determine the presence or absence of stones. No stone found. The case narrowed itself down to a somewhat large and freely movable right kidney. After excluding the other possibilities in the way I mentioned we finally tried unmobilizing the kidney to some extent with rubber adhesive. That gave a great deal of relief, and we subsequently, after taking off the plaster, put on a belt low down. Great relief has followed. That patient has not been operated on because she is nursing a three months old baby and we have been anxious not to deprive the baby of the mother's milk. We are temporizing with the case until the baby is weaned.

In New Orleans the common practice in dealing with movable kidney is to do the Edebohl operation. The objection I have always found to this operation is that it fixes the kidneys at a point below the normal. The operation which Dr. Crisler described today meets that objection. It anchors the kidney high up, and I think it is an operation to be considered in practice.

Dr. Smythe.—The operation described by Dr. Crisler impresses me as being the most rational one that has hitherto been brought to my notice and is the procedure that I would adopt in cases justifying surgical treatment.

The most important duty for the surgeon to perform is the selection of suitable cases for operation. Abnormally mobile kidneys are common enough, but that every abnormally mobile kidney is solely responsible for the symptoms complained of I do not agree.

The floating kidney differs from the abnormally movable kidney. Floating kidney is usually unilateral and is an organ that should receive surgical attention as a rule.

The abnormally movable kidneys are often bilateral and are detected in an otherwise abnormal patient—general viseroptosis—Glenard's disease—will be found to exist and operation upon such a kidney will prove disappointing in its results.

We should endeavor to determine whether or not movable kidney be solely responsible for the symptoms complained of before advising operation.

The operation of fixation of the kidney has, in my opinion, a very limited place, if a place at all, in justifiable surgical procedure.

I have been called upon to attend several patients who had a kidney anchored, and I have invariably found the last state of such patients worse than the first, for which the operation was performed.

The position of the kidney is not a stationary or fixed position. It moves up and down during inspiration and should not be fixed hard and fast in any position, though operation to limit its range of motion in selected cases would prove of service.

Dr. Gessner.—Before Dr. Crisler closes the discussion I would like to ask what he means by the usual incision. Does he mean the oblique lumbar incision?

Dr. Crisler.—Yes.

Mr. President, I have very little to say. My friend, Dr. Smythe, and I never agreed entirely upon what is best to do about a loose kidney. I notice that he is coming towards my way of looking at it a little bit more now than four years ago, because at that time he did not believe in anchoring any of them unless they were distinctly pathological.

Now, what is a floating kidney? How far can a kidney move in the abdomen before it gives trouble? I don't know. I have seen the spleen of a patient down in the pelvis ramming the uterus backward towards the rectum and the patient apparently in very good health, four or five times in my life. I don't know just how low the kidney can descend before it is necessary to do something to it.

The English observers are away in the lead on this particular subject. They are giving it more careful study and consideration. But the thing is that any kidney that is below the margin of the ribs—that can be palpated below the margin of the ribs—is a movable kidney. That may or may not be within the limits of safety. I don't regard a kidney that you can feel as "movable;" it might be slightly mobile, as you may have a loose attachment, and go down so far and no further. The kidneys I am talking about are down to about the navel. That is what we call "floating kidneys." I don't think the other kind should be considered at all.

One more point that Dr. Carter brought out that I want to emphasize, and that is this, that patients with movable kidneys, or very movable kidneys, ought to know it. His idea to not tell them about it appears wrong to me. I don't believe in it any more than I believe if a man had a tumor dragging on the ground you ought not tell him about it. This idea comes from the Christian Science standpoint that we ought not to tell—tell them to think themselves well and they will be well. There is nothing in that. I think they ought to be told about it and treated humanely.

THE MATAS TEST FOR THE EFFICIENCY OF THE COLLATERAL CIRCULATION IN ANEURISMS OF THE EXTREMITIES.*

By URBAN MAES, M.D.,
New Orleans, La.

The propriety of cutting off the circuation in the large vacular trunk has always been a serious problem with surgeons. The technical features of the classical operations recommended for the cure of accessible aneurisms, are simple enough in themselves, but the consequences of such procedures have always been feared.

The Matas operation or endaneurismorrhaphy has greatly diminished this risk. As this descriptive name implies, all work is done within the sac and accomplishes all that can be hoped for in the cure of aneurisms, whether of the fusiform or sacriform type. The circulation is arrested by intrasaccular suture of all orifices and by collapsing and diminishing the size of the tumor, pressure is relieved, thereby putting the surrounding vessels and the anastomotic supply under the most favorable conditions for nourishing the distal parts. We must obey the inflexible law of the originator and not interfere, by dissection or otherwise, with the perivascular structures. In a small number of cases, when accompanying veins have been injured and ligated, results have been less brilliant. Now, with the Matas test, in addition to the Matas operation, we are able to determine with accuracy the condition of the collateral circulation. Presuming that the members are familiar with Dr. Matas work in this field of surgery, I will not attempt to go into further details here, but would refer those interested to his complete and instructive address as President of the American Surgical Association, and published in the Transactions of that Society for 1910.

My purpose in reporting these cases is to emphasize the reliability of the test and to relate with as little detail as possible examples which prove its clinical value.

Case 1.—Arterio-venous aneurism of femoral. Gunshot injury. L. S., white male, age 18, farm laborer, native of Mississippi. Admitted to Touro Infirmary, April 12, 1911. Previous and family histories irrelevant. Organs normal. On March 26, 1911, eighteen days before admission, patient was shot at close range with a 32-calibre soft-nose bullet, which penetrated the antero-internal aspect of the upper part of the middle one-third of right thigh. The wound of exit was at a corresponding level on the posterior aspect of thigh. An imaginary line connecting the wounds of entrance and exit would pass through the femoral vessels to the inner side of the femur. There was no immediate inconvenience from the injury, very little bleeding, in fact, patient was able to walk to his home, some distance away. Some hours later, sudden pain was felt in the wound, and at this time a swelling about the size of an egg was noticed. The pain and swelling persisted, the latter not increasing in size, and the patient limped into my office eighteen days after the injury.

Examination revealed a pulsating tumor in the region described, with a small central scar. On palpation its expansile character was marked, also the characteristic thrill. With a stethoscope the thrill was loud and was transmitted along the femoral vein for about eight inches in each direction. Expansile pulsation and thrill were instantly stopped by pressure on the femoral artery at Poupart's ligament. The color was about the same as that of the other limb. Dorsalis pedis artery was small and hardly palpable on both sides. Measure-

*Read before the Section on Surgery of the Southern Medical Association at Hattiesburg, Miss., Nov. 14-17, 1911.

ments showed only slight difference just below the tumor, 15½ inches on sound side, 16½ inches on injured side.

Having determined to attempt suture on the Matas-Bickham plan, I asked the advice and help of Dr. Matas. Realizing that suture with restoration of lumen of both vessels might not be possible, the Matas test for collateral circulation was tried before operation. The Massachusetts General Hospital compressor, modified by Dr. Matas, was placed just above the aneurism, cutting off the circulation through the tumor. The Esmarch elastic bandage was then put on from the toes well up to the aneurism and left in place for five minutes. On removal of the Esmarch bandage, with compressor still controlling the circulation through the aneurism, the blush began to spread slowly down the leg and did not reach the toes for six minutes, and then only faintly. Full color returned in twenty minutes.

Feeling reasonably certain of the efficiency of the collateral supply, the operation was performed on April 21. After evacuating a large amount of unorganized clot, the direct communication between artery and vein was located, with no intervening sac; only a large amount of peri-vascular coagulum. Restoration being impossible, and not wishing to disturb the peri-vascular tissue by extensive dissection, an intra-saccular running suture of No. 2 chromic gut was placed so as to include both artery and vein, thereby cutting off both arterial supply and venous return. On removal of constrictor, there was no bleeding from aneurismal sac. A counter opening was made posteriorly for drainage, wound narrowed down to tube, limb dressed and splinted.

The foot and leg were inspected for returning circulation and were found cold and cadaveric. After returning to bed at 1:10 p.m., patient complained of great pain in heel. Heat was liberally applied and morphia ¼ gr. with digitalis were givtn by needle. The pain yielded promptly. Foot and toes remained blanched and cold until 6 p.m., five hours after operation, when the slowly returning circulation began to show itself by warmth, sweating and gradual return of color and sensation.

Further recovery was uneventful and a recent report from patient states that limb has given him no trouble, and he is doing his work as a farm hand.

Case 2.—Pathologic aneurism of popliteal (sacciform type). V. B., white male, age 44, bookkeeper, native of Louisiana. Entered Charity Hospital, September 25, 1911, complaining of a large, painful swelling behind his right knee, which was noticed about a month ago, and has been getting more painful during the past three weeks. Family history was negative. Previous history, does not drink. Has had most diseases of childhood. Has had one attack of gonorrhoea. Denies syphilis. Had an attack of rheumatism twenty-four years ago, which lasted two years.

Examination revealed a hard, painful tumor, about the size of an orange, occupying the upper part of the right popliteal space. The expansile pulsation is barely perceptible. With a stethoscope the bruit is soft and sounds muffled. It seemed probable that there was a large amount of organized clot tunnelled by the blood stream. Pressure on the femoral artery beneath Poupart's ligament stopped pulsation and bruit. Measurements showed little difference in limbs, except at site of tumor. At this point thigh measured 16 inches on diseased and 14 inches on sound side. Ankle pulses about the same on both sides.

Matas Test: The compressor was applied to the femoral artery in Hunter's Canal just above the adductor opening. The Esmarch band was now put on from the toes to the compressor, and left in position for three

minutes, being removed at this time on account of pain. The blush was plainly evident in 1½ minutes.

Operation October 4, 1911. After prophylactic control of hemorrhage the sac was sought by an incision over its most prominent part. This exposed the spread-out fibres of the biceps muscle, which were separated, exposing the sac beneath. In this situation neither nerve nor vein came into view. On opening sac, a recent (not organized) clot weighing 120 grams was removed. What I then took to be the afferent opening of a fusiform aneurism was identified and sutured. Close inspection failed to reveal the efferent opening. The constrictor was then removed and still no opening could be found. By this time the toes were warm and pink. I then concluded that I was dealing with a sacciform aneurism with a single opening on its floor near the upper pae. Had this fact been recognized in time a restorative operation might easily have been done, but this was scarcely necessary in this case, as the return of the circulation through the collateral supply was very quick. As the sac was very thin no approximation of its walls by suture was possible. A few sutures some distance from the wound edge turned in the biceps so as to fill the cavity with muscle. Two cigarette drains were put in and wound closed. The drains were removed at the end of seventy-two hours. Wound healed without suppuration and patient left the hospital in three weeks from date of operation with knee a little stiff but otherwise a perfect recovery.

Case 3.—Perforating gunshot wounds of femoral artery. (Reported through the courtesy of Dr. H. B. Gessner.) T. W., colored male, age 25. Admitted to Charity Hospital, June 10, 1911. Family and previous histories have no bearing on present condition. On day before admission patient was shot in left thigh with a revolver, 38-calibre bullet. There were four wounds on the antero-internal aspect of the middle one-third of right thigh. A pulsating tumor about 2½ inches in diameter in middle one-third of thigh was present, characterized by aneurismal pulsation and thrill, and a systolic bruit was audible. Thigh is 1 inch larger than uninjured side. Ankle pulses slightly weaker on injured side. The Matas test showed a return of the circulation through the collateral supply in five minutes on the injured side. Control on the healthy limb showed return in fifteen minutes. The more rapid return of the circulation in an extremity which is the seat of aneurismal disease had been previously observed, and is explained by the fact that the collaterals are either undergoing development or have already become active carriers of blood.

On cutting into the tumor a small amount of recent clot was found. Close inspection revealed two lateral openings in the femoral artery, without any evidence of sac formation (a so-called false aneurism), the clot being localized by aponeurotic planes. After removal of clot, the arterial wounds were sutured, hoping for a restoration of the arterial lumen and normal circulation in the limb. In spite of an apparently successful suture the ankle pulses could not be felt until the ninth day, when both dorsalis pedis and posterior tibial pulses were easily recognizable. This lead to the conclusion that thrombosis had occurred at the site of suture, survival of the limb being due to an efficient collateral supply.

The wound healed per primans and further recovery was uneventful.

In reviewing the report of these cases, while few in number, the following points strike me as worthy of special mention:

1. The reliability of the test, even in the cases where both artery and vein were included in the suture, as shown by Case 1.

2. The late but complete return of the circulation. The interval was the cause of anxiety which need not be so in the future, especially in young subjects, who usually have great possibilities for collateral supply.

3. It is of paramount importance not to disturb the perivascular structures. This point has been insisted on by the originator of this plan, and failure to obey this law has been regretted.

4. The method of dealing with the sac after arrest of circulation is not so important as was formerly taught. This cavity should be closed by the simplest method that presents itself and with the least possible traumatism. Lining the cavity with redundant muscle gave a very satisfactory result in my second case.

In conclusion, I wish to thank Dr. Matas for his valuable suggestions and Dr. H. B. Gessner for the privilege of reporting his case.

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THE MATAS BAND AS A TEST OF THE COLLATERAL CIRCULATION THROUGH THE CIRCLE OF WILLIS.*

By HERMANN B. GESSNER, M.D.,
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Students of vascular surgery have long felt the need of some device for occluding the lumen of vessels, which could be employed as a permanent means under favorable circumstances, yet when necessary could be removed, leaving the tissues unharmed by this temporary inclusion within its grasp. Such a means we believe to have found in the manicured aluminum band of Dr. Rudolph Matas, thoroughly tested on the lower animal in the Miles Laboratory of Operative Surgery by Dr. Carroll W. Allen.

In the extremities the need of this band is less, because we have in the Matas method, employing the Esmarch bandage and Massachusetts general compressor, a test for collateral circulation which has in a number of cases stood its ground, proven the claims of its champion, and in no case as yet recorded proved fallacious. It is particularly in the neck, where we have to deal with the collateral circulation through the circle of Willis, that the Matas band finds its widest sphere of usefulness, its highest opportunity for demonstrating its fitness for survival. Statistics give the mortality of ligation of the common carotid as 10 per cent in those under 40, 25 per cent in those over 40. The application of the usual means employed for ligation—the pliable ligatures of silk, linen, catgut, kangaroo tendon—produces changes in the coats of the artery which make us fear to remove them and trust the damaged vessel to conduct a stream of blood under pressure, or its branches to receive this stream, possibly laden with emboli.

Therefore, the ligation of the common carotid with these unremovable means must always be attended with fear of the most serious complications from which it would be impossible to extricate the patient without at once plunging him into the dangers of hemorrhage and embolism.

The aluminum band, on the other hand, may be applied to the common carotid artery with the assurance that if nothing untoward occurs to show the failure of the collateral circulation through the circle of Willis, it may be left in situ indefinitely; if in the course of a number of hours (as many as seventy-two as shown by the experiments carried on by Allen under the direction of Matas) evidence of disturbed cerebral circulation is observed, the band may be removed, leaving the arterial

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wall intact, the vessel free from any likelihood of hemorrhage, and its distribution likewise free from danger of embolism.

Let me recite simply the following cases, from which conclusions may be drawn, as far as is possible, considering the number of observations:

Case 1.—Ed. McG., colored male, telephone lineman, 33 years old. Admitted to Ward 10, Charity Hospital, March 23, 1910; discharged April 13, 1910. Family history negative. Personal history: Moderate use of alcohol and tobacco; urethritis and venereal sore. Present illness: Five months of pain in neck and swelling in right side of neck; five days before admission throbbing was observed and pain became quite severe. Examination showed a mass extending from lower border of thyroid cartilage to lobe of ear on the right side, on both sides of the sterno-mastoid, but mainly posterior. It presented expansile pulsation, thrill and systolic bruit, measuring 4½ inches in vertical by 6 inches in transverse diameter. Pressure on the common carotid centrally to the tumor arrested pulsation completely.

Diagnosis: Aneurism of the common carotid bifurcation.

On March 26, the common carotid artery was exposed by me below the omo-hyoid muscle under infiltration anaesthesia (No. 1 Schleich solution plus adrenalin hydrochloride). After division of the sheath the aluminum band (¼-inch wide, No. 20 Brown & Sharp sheet metal guage with the borders filed smooth, "manicured") was passed around the vessel within its sheath, the end clamped down with needle holder until the pulsation in the tumor ceased completely, and the excess of band was cut away with pliers. The wound was closed by layers with catgut. Primary union. Convalescence uneventful except for an acute tonsillitis coincidental with the operation. The patient was lost sight of on April 13, eighteen days later.

Case 2.—Leonard A., colored, male, porter, 20 years old. Admitted to Ward 10, Charity Hospital, April 18, 1910; discharged July 8, 1910. Family history negative. Present illness: Gradual development of a mass involving the left tonsil, over about one year. Diagnosis: Sarcoma of the tonsil. Tracheotomy, under ether, May 9. Exposure of common carotid was done by me, June 2, under infiltration anaesthesia (Schleich No. 1 plus adrenalin hydrochloride). The aluminum band was applied as in the previous case, also below the omo-hyoid. Small wick drain, removed after twenty-four hours. Primary union.

On June 18, under ether, the tonsillar sarcoma was removed. Practically all the tissues of the left side of the neck except the vertebrae, trachea, esophagus and phrenic nerve were removed above the lower ¼, including the common carotid artery (occluded below by the aluminum band), the jugular vein and the pneumogastric nerve (which had been practically converted into sarcoma tissue and had probably ceased to function some time previously). The aluminum band was found firmly encysted after a lapse of sixteen days. There was a considerable degree of shock, requiring intravenous saline infusion. Recovery from operation and discharge from hospital, July 8. The metal band was at this time, thirty-six days after introduction into the tissues, still encysted and unoffending. Later, death by cachexia.

Case 3.—John M., white, blacksmith, age 40. Family history negative. Previous history: Alcoholic excess, repeated attacks of urethritis, venereal sore at the age of 18 years. Present illness: Began two years ago with a fall on the head, which dazed him but did not cause loss of consciousness; there was bleeding from the mouth. Several days later he noticed a protrusion of the left upper lid, and fifteen days after his fall he began to hear a rhythmic noise in his head like that of a hammer hitting an anvil. The noise had gradually increased in intensity.

Physical examination showed the left upper eyelid protruding and presenting a dilated vein, which pulsated in correspondence with the pulse. There was exophthalmos (about ¼-inch) of the left eyeball. Over the left temporal region could be heard a loud systolic bruit, suggestive of rhythmic blows on boiler iron, audible also over the orbit. There was in addition to the systolic bruit a constant buzz, indicative of an arterio-venous communication. A diagnosis was made of arterio-venous aneurism of the internal carotid artery and cavernous sinus.

On July 1, under infiltration anaesthesia (Schleich No. 1 plus adrenalin hydrochloride) the common carotid bifurcation was exposed by me for the purpose of occluding the internal carotid branch if feasible. Here a dilatation was found, involving the external carotid and the adjacent portion of the bifurcation. To relieve the patient of the danger of a progressive aneurismal condition at this point the external carotid and superior thyroid arteries were ligated each about ¾-inch from its origin with iodized catgut. A Crile clamp was applied to the internal carotid for the purpose of testing the vision and other cerebral functions of the still conscious patient. It may be well to call attention to the fact that all three of these cases were operated on under local anaesthesia, which is amply sufficient for ligation of the carotid and which has the additional advantage of permitting observation of the immediate effect of the carotid occlusion.

The Crile clamp, screwed up to point of obliterating the lumen of the internal carotid, and arresting both the palpebral pulsation and the intracranial bruit, did not affect the patient objectively or subjectively. It was, therefore, at 3 p. m., replaced with a Matas band, applied so as to produce the same effect, which again left the patient undisturbed. The wound was closed in tiers with buried catgut and superficial silkworm gut sutures.

He was observed at the end of one and one-half hours and of three hours respectively and found unchanged. Approximately four hours and fifteen minutes from the time of the placing of the band the patient presented stupor, together with loss of sensation in the right half of the body, left facial paresis, slight plosis of left lid, and diminution of motion on the right side of the body. He could be roused slightly, but could not answer questions.

The right side of the body showed reflexes quite abolished; the left was normal in this respect. Respirations were long and deep, fourteen per minute; pulse strong and regular, 72 per minute. At 9 p.m., six hours after the application of the band, nearly two hours after the onset of stupor, the band was removed without anaesthesia. This was done with a flat Hartley chisel, which was pressed between the two ends of the doubled band until they were separated sufficiently to be grasped with artery forceps; the further separation and removal was then easily accomplished. The arterial wall seemed intact, no external evidence existing of the site where the band had lain. The palpebral vein was again prominent and pulsating.

About three minutes after the removal of the clamp a sudden, violent, general convulsion was observed, which lasted for about ninety seconds, and left the patient with no tangible lesion.

In the course of two and one-half hours the patient emerged from his stupor and began to answer questions. By next morning all symptoms of cerebral ischemia had disappeared. The palpebral vein was found collapsed and the aneurismal bruit was inaudible. Gradually vein and bruit came back until at the time of his discharge, July 8, his condition was practically as on admission. The convulsion was probably due to a sudden and intense hyperemia resulting from the rushing of blood into the anemic cerebral tissues.

Comment: The advantage of the metal

band lies in the possibility of using it first as a temporary or tentative means of occluding a vessel and then allowing it to remain if no untoward symptoms develop.

The use of the Crile clamp in Case 3 produced no immediate evidence of disturbed circulation, which came on, nevertheless, four and one-quarter hours after the Matas band had been fastened in place. The continued use of the Crile clamp over a number of hours would be uncomfortable, inconvenient and would expose the wound to danger of infection. Later a permanent means of occlusion would have to be substituted for them at a second operation.

In Cases 1 and 2 the bands remained eighteen days and thirty-six days respectively until the patients were dismissed, having become firmly encysted and innocuous. They performed the task of permanent occlusion as well as the ordinary pliable ligatures could have done, while the latter could not have been removed had the occlusion proven hurtful.

DISCUSSION.

Dr. Cohn.—Dr. Gessner, in discussing this paper, recorded the time in which his band had remained in situ without doing damage. I simply want to report, as already has been reported, a case in which I left the bands on until the man died—a period of four months—and the postmortem showed that the bands had become encysted and had not acted as irritants.

The band is a very useful agent for testing the collateral circulation on the brain prior to extensive operations about the face. In one case of a carcinoma of the face, prior to doing an extensive dissection, I left a band on the common carotid for twenty-four hours, and finding no disturbance we proceeded with the case.

Dr. Maes.—We have already taken up a good deal of time, Mr. Chairman, and I only want to say that the hyperemia test is for the determination of the limit of healthy circulation in the extremities prior to the formation of the line of demarcation in vascular changes causing gangrene.

Moschowitz brought out some years ago that by the application of the Esmarch band, in the way that we usually employ it for the prophylactic control of hemorrhage, that on removing that bandage and the constrictor we were able to determine the exact condition of the circulation by the hyperaemic blush. Anaemie areas the size of a ten-cent piece will be shown.

Dr. Matas elaborated this idea. He leaves the compressor in place while the limb is being rendered anaemic by the elastic bandage. His purpose in using the compressor instead of the elastic band or constrictor is to cut off only as much of the circulating as comes through the aneurismal sac. The operative results where the test has been used have been so favorable that its application, it seems to me, should be more generally useful, as we are able to determine exactly, before the operation, just how much gangrene we may have or whether there will be any at all.

Dr. Gessner.—I have very little to say except that the importance of this matter was impressed on me by the other side of the picture last year. I assisted a surgeon in operating on a tumor of the neck, and in the course of that operation it became necessary to ligate the common carotid artery. The patient was over forty years old, with an alcoholic history. Within twenty-four hours cerebral circulation failed and coma and paralysis developed. All we could do was to sit and see the patient die. We had a very well conducted postmortem by Dr. Gurd, which showed that the posterior cerebrals in the circle of Willis were nothing but fibrous cords. The circulation was anatomically defective or congenitally defective. The use of an aluminum band would have permitted the restoration of the circulation when it was seen that the collaterals had failed.

CATARACT EXTRACTION WITH CORNEAL SUTURE.

By E. C. ELLETT, M.D.,
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Probably every person who ever operated for cataract has felt the desirability of having some satisfactory mechanical means of closing the wound after the operation is completed, just as we have and use in other parts of the body. As far as I know, no such means except a suture has ever been suggested. Certainly at present we have no unobjectionable substance that could be applied to the surface of the eyeball to accomplish the coaptation and

*Read before the Section on Ophthalmology of the Southern Medical Association, Hattiesburg, Miss., November 14-17, 1911.

protection of the wound. Sutures are used in muscle operations, operations on the conjunctiva and on wounds of the sclerotic, but only rarely is an effort made to place a suture in the corneal tissue. When a conjunctival flap is made in the incision for cataract extraction, the possibility of using a suture is apparent, but with the conjunctival flap it is not much of an advantage, as it would not be placed till the operation was completed, and if the operation had been safely completed and a good conjunctival flap secured, one is very willing to let matters rest and not carry out further manipulations with their possible risks. A suture at the apex of the conjunctival flap exerts little influence on the corneal or corneoscleral wound. The flap, as we have all seen, smooths out and applies itself neatly, quickly and firmly in place without any suture. A suture to be of any considerable help, therefore, would have to be placed in the cornea, or at least so as to exert its effect on the cornea.

A very good review of the subject of the suture in cataract extraction was published by Bates in the Archives of Ophthalmology, Vol. XXVII, page 81, since which no similar summary of the work has been described. To this article I have referred for some account of the early efforts with this method. From animal experiments Bates thought that the suture should pass through the cornea, as a suture passed merely into it, produces, when tied, an inversion of the edges of the wound that was not desirable, especially as it invited adhesion of the iris to the wound.

Realizing the possible good to be accomplished by closing the wound by suture after the extraction of a cataract, H. W. Williams, of Boston, first advocated its use and described and practiced* it as follows:

"The advantages of the corneal flap extraction may be much enhanced, and its dangers materially lessened, in my judgment, by the use of a suture to retain in apposition the edges of the wound. Securing a more immediate union, we not only avoid ulceration of the border of the flap, and prolapsus iridis with its attendant evils, but the prompt restoration of the fullness of the globe, and of the normal relations of its several parts, lessen the chances of irritation from pressure of any cortical fragments or remnants of capsule upon the delicate contiguous structures, and the occurrence of irido-cylitis. This suture, a single strand only of the finest glover's silk, passed through the edges of the wound by means of a very minute, short needle held by forceps, can be tolerated, without detriment, even in the cornea, but at present I am disposed to extend the corneal flap at its apex a little way into the conjunctiva, so as to allow of the placing of the suture in this membrane, where it is more easily inserted than through the tougher corneal tissue."

Suarez de Mandoza published* in 1889 and 1891 a series of 38 cases in which a corneal suture was used. He made a shallow incision on the outer corneal surface and passed a fine suture through the edges of this incision. The loop of the suture was left long and laid to one side. The incision was then made in the usual manner, passing into the groove and between the two threads.

Suture of the conjunctiva has been tried by C. H. Williams* and a few others, but on the whole the method of suture of any sort has never become popular.

In 1894, Prof. Kalt, of Paris, published* a new method of suture, and reported fifty cases in which he had used it. His method more nearly resembles that of Mendoza, but no preliminary incision is made. It is described as follows:

"I use very fine, sharp-pointed needles, and thin but strong silk threads. The needles, when armed, are sterilized in hot air and kept for use in a sterilized paper envelope. After

*Archives of Oph. and Otology, Vol. 1, page 402.

*Receuil d'Opthal, 1889, pp. 47, 523 and 544. Ibid, 1891, p. 597.

*Boston Medical and Surgical Journal, April 16, 1896.

*Archives of Ophthal, XXIII, 1894, p. 421.

cocainizing and disinfection, I pass the needle through the cornea, in the vertical meridian, about 1 m.m. underneath the limbus; the point, without penetrating into the anterior chamber, emerges at the juncture of the opaque border, and the thread is drawn. Then the needle is reintroduced, about 1 m.m. above its point of exit, into the episcleral tissue, as is done in the muscular advancement. So soon as I find that the point has penetrated into the resistant tissue, I draw it out again, in order to involve as little of the tissue as possible. As it is impossible to draw the needle out at right angles, about 2 m.m. of the conjunctiva are loaded on it, which is of no consequence. In drawing this thread I leave a loop which is placed sideways toward the nose, and spread out carefully so as to avoid twisting.

The corneal section is made in the ordinary way, care being taken that the knife passes nicely through that portion of cornea which the suture has left free. Then I take off the speculum and remove the cataract as usual. When the iris is well in position, an assistant holds the upper lid up and I tie the thread.

It is to be borne in mind that I do not, like Suarez, make a superficial incision into the limbus cornea, in the depth of which lie the points of entrance and exit of the thread, for this makes the corneal section with the narrow knife very difficult without cutting the thread in so narrow a passage. The coaptation in my procedure seems to me quite sufficient. Furthermore, I am not afraid to draw the knot tightly at the risk of folding the cornea. This folding disappears in a day, and the corneal astigmatism is neither increased nor diminished."

A second paper by Kalt* reports 2,000 cases operated on by this method, and also describes his modified technique. Certainly this is the most extensive trial of the corneal suture, and somewhat extended quotations from the last paper will make clear Prof. Kalt's views on the subject. He calls attention to the fact that prolapse of iris occurs after simple extraction in the hands of excellent operators in the proportion of 10 or 12 per cent, and that excision of this prolapse presents great practical difficulties as well as danger of loss of vitreous. Iridectomy as a step of the operation does not exclude entanglement of the pillars in the extremities of the corneal wound. If we could prevent hernia of the iris he thinks we would all prefer to do simple extractions, and to that I suppose we would all agree.

The instruments used by Prof. Kalt are deWecker's needle holder, without catch, and a special needle, of extreme fineness and perfectly pointed. The needle penetrates about one-half the thickness of the cornea and then emerges. Immediately after being used the needle is cleansed and oiled. The thread is cotton and composed of two or three strands. The needle is threaded, and needles and thread are put in a paper envelope and sterilized by dry heat. A special scissors is used for removal of the stitch, but the ordinary iris scissors will answer.

PLACING THE SUTURE.

"The suture consists of a vertical corneal portion and a transverse episcleral portion. The whole forms a T, with a gap between the junction of the horizontal portion with the vertical portion. The length of each of these portions does not exceed one m.m. The vertical intracorneal branch follows the vertical corneal meridian and stops exactly at the juncture of the transparent portion with the sclera. The horizontal portion traverses the opaque part of the limbus as near the cornea as possible. An interval of .5 m.m. corresponding to the limbus is ample to permit the passage of the knife."

Not to quote verbatim the rest of the paper, it is stated that in passing the suture the corneal portion (vertical) is passed first. The loop of the suture is left long and laid to one side, and if wet will adhere to the skin or the gauze with which it is covered, and not get tangled. In passing the knife, the incision may be completed in an oblique meridian of the

*Annales d'oculisteque, June, 1910.

cornea instead of the vertical, thus rendering the cutting of the thread less likely. The corneal incision, capsulotomy and delivery of the lens being completed, the thread is drawn by pulling on its upper (scleral) branch, and a square knot is tied. If this suture is well placed, and the points are close to each other, tying them does not cause much folding of the cornea, but it is of no matter if it does, as the post-operative astigmatism is not affected thereby. Prolapse of iris and vitreous, if they occur, are reduced by tying the suture and thus approximating the corneal wound. "The knot once tied, one is master of the situation." Cortical masses are removed with a suction aspirator, and the iris smoothed into place without fear of provoking loss of vitreous. Eserine may be used when the iris tends to prolapse, but is not as a rule. The dressing is monocular, and patients get up on the second day. The stitch is removed on the second or third day, usually the latter.

The only accident attributable to the stitch is infection of the stitch hole in the cornea. This is rare, and if the stitch is at once removed it remains limited.

Prolapse of the iris occurred in 6 per cent of Prof. Kalt's earlier cases, but with improved armamentarium he has had but 3 per cent of prolapse in his last 1,100 cases. The hernia which occurs with the suture is very different from that which may occur without the suture. The latter is often large and its excision is difficult and attended with danger of loss of vitreous. With the suture the hernia is limited to one side of the stitch, its excision is easy and there is no danger of prolapse.

According to Prof. Kalt, the suture is indicated in all cases of cataract, senile or otherwise, not complicated with adhesions of the iris to the lens capsule. It is especially indicated in young subjects.

The objections urged to the operation are the difficulty of passing the stitch, and the danger of cutting it with the knife. This is perhaps true, but it can be placed and the section made without cutting the thread. Kalt cuts it in 1 per cent of his cases, and with a little skill it can be placed again in the same tracts.

Allport mentions* seeing a corneal suture used by Dr. Webster, of New York, in a case in which he especially feared loss of vitreous. A double-needled thread was used and the stitches were passed parallel to the corneo-scleral junction, and *tied loosely*. This is not in accord with Kalt's practice, since he passes the suture a little differently and *ties it firmly*.

In the summer of 1910 I had the opportunity to visit Prof. Kalt's clinic at the Quinz-Vingt Hospital and saw him operate with the corneal stitch. I also saw some of his results, and on my return I made use of this method as occasion presented. In all I have used it twenty-four times, all in cases of senile cataract, except in two cases of dislocated lens. The results were in the main extremely satisfactory. In two cantankerous old men who would not keep still, a small prolapse of the iris was found at the first dressing, within twenty-four hours after the operation, and was excised without difficulty. The prolapse, as Prof. Kalt points out, was small and limited to one side of the wound. The excision was easily done, the pillars of the coloboma were easily dressed back and the ultimate result was excellent, with a narrow oblique coloboma. Two additional prolapses occurred in perfectly tractable and quiet patients, without apparent cause. These were also excised without any trouble, and the final results were excellent. By "result" is meant the surgical result. The visual result is no better than in a successful cataract extraction by any other method.

In contrast to the four cases of prolapse, I had one patient, a woman with chronic nephritis, who had on the night of the operation two quite severe uremic convulsions. I was in the hospital when these occurred, and under appropriate treatment the convulsions subsided, but she was unconscious for several

*Oph. Record, March, 1911.

hours. When I visited her the next morning my nurse had prepared, without any suggestion from me, the instruments and solutions for excising a prolapse of the iris, which she thought would certainly follow the convulsions. To our surprise the wound was perfectly closed and the iris in place. No subsequent accident occurred and the final result was perfect. In another case the patient sneezed, causing a gaping wound. The speculum was removed, when a spasmodic closure of the lids turned the upper half of the cornea down on itself. The lid was quickly raised, the suture tied, and as Kalt says, I was at once master of the situation. The ultimate result was perfect. A second experience in an unruly patient was almost the duplicate of this, but with the suture tied an elaborate and deliberate toilet of the wound was accomplished. In the second case of dislocated lens a vitreous prolapse followed the incision, but the lens was delivered with a wire loop and the tightening of the suture reduced the prolapsed vitreous.

The suture is surprisingly easy to insert. A farm hand probably could not place it, but to any one possessing the skill necessary for ophthalmic surgery, there is no difficulty.

In tying the suture I make a double turn, securing the knot against slipping. By drawing it tight enough to produce slight wrinkling of the cornea one is assured of approximation of the wound edges, and there is no objection to this, as it disappears when the anterior chamber reforms. In spite of this the suture in one case was found untied at the first dressing, just as we sometimes see happen in the case of conjunctival sutures, as after a pterygium operation. In this instance the suture had served its purpose, however, and the wound had closed.

Some authors (Wood, System of Ophthalmic Operations, Vol. II, page 1221, and Black, Oph. Record, Vol. XIV, page 75) object to the stitch in that it requires practically a second operation for its removal. This does not seem to be a practical objection. The patient need not be told that there is a stitch in the eye, and when the time comes for its removal the eye is cocainized and he is then told that there is a thread to come out which will take a moment. The lid is raised, the suture seized, cut and drawn out without any disturbance.

In none of my small series of cases did the stitch cause any irritation. In none of this series did the slightest infection occur.

I was fortunate enough not to cut the stitch in making the corneal incision in any case. In one case, of dislocated lens, there was considerable loss of vitreous following the incision, and in removing the speculum hastily the thread was caught and its corneal portion torn out. I was thus deprived of its help in a case in which it would have been of signal benefit.

Some one, I do not now recall who, has suggested the use of an absorabable suture (catgut) which need not be removed. This is theoretical, as the finest catgut which I have ever been able to procure is much too coarse to use for this purpose, and would not pass through the eye of the needle.

The scar left by the stitch is a minute vertical one which is hardly perceptible. At least it constitutes no objection to the operation.

I do not pretend from this small series of cases to advocate the stitch as a routine step in cataract extraction. To my mind it is a very valuable addition, whose advantages far outweigh its disadvantages, and I expect to continue to use it. I present my personal experience for what it is worth.

DISCUSSION.

By the Chairman.—We have heard a very interesting paper by Dr. Ellett. It is now open for discussion.

By Dr. Savage.—I had the pleasure of listening to the paper before, but I believe I listened to it with as much interest as the balance of you. There was a reason why I should listen more attentively than before, because I had a condition presented in my own practice since then that made me long for the stitch. Twice in my life I have had hemorrhages occur, once six hours after and once eight hours after operation for glaucoma. In the eight-hour case it could be easily accounted for. The man became

excited, and it was due to his nausea and retching. The blood began to pour from his eye, and I wished I had that eye closed with something, but I did not know as much about stitching as recently. But since then I have had as beautiful an operation as I have ever done on any case. The patient was hardly middle-aged, but the eye was in as beautiful a shape as I have ever seen an eye, and the wound had closed perfectly, and yet, six hours after, that woman had no eye at all. A blood vessel had ruptured, and the first time in my life I saw the vitreous membrane protruding from the incision; every particle of vitreous had got out, including the membrane. I think even as delicate a needle as that might have closed that wound so as to prevent that rupture. I don't know. It may have had force enough behind to tear the stitch out, but I think the patient would have had a better chance if the stitch had been put in, against hemorrhage. We never know when we are going to have an accident of that kind, and if this will safeguard us against vitreous humor hemorrhage it is worth while in all of our cases.

Of course, everybody can imagine how comfortable he would feel in cataract work, if the vitreous were coming out and he could just close that wound up and stop it. You have done that often, haven't you?

By Dr. Ellett—Yes, sir.

By Dr. Savage—I think, in your discussion, or your paper, you mentioned something of that kind. I like the wide stitch, and yet I have never taken it. The only reason is that I have never seen it done. If I had seen it done, as Dr. Ellett saw it done, several times, why, I think probably I would have been doing it. I am not afraid to take hold of a thing that promises helpfulness; but I never had a needle delicate enough, and that was why I asked you where you bought your needles. I did not know just what size I was to use, but I think, if I were to take a stitch, I would pass the needle both times, transversely. I think I would take a point stitch and pass it just as your illustration shows the stitch. I think there would be some advantage in doing that from above. I hope that one of these days we will all be able to undertake everything that is helpful to us in our work, for all of us know we need everything that will help us.

By Dr. Feingold—I am very glad that Dr. Ellett read this paper before us, and that he limited his paper to the method of Dr. Kalt, in Paris, because it strikes me that if we make a suture of the cornea, where the needle passes through the whole thickness of the cornea, we are running a certain amount of risk. All of us who have had occasion to examine eyes, lost after a cataract operation, will find a large percentage of the causes of failure due to transplantation of epithelium into the anterior chamber. We know where epithelium comes from—either from the conjunctiva or from the cornea. After getting into the anterior chamber it continues to grow, and in a similar manner as we have seen recently carried out in the laboratory experiments by Crile, who has succeeded in growing tissues in the test tubes.

My fear would be, if we make a suture going through the whole thickness of the cornea, that the needle or eye of the needle, or the sewing material, might carry some epithelium into the cornea, and into the anterior chamber and leave it there, where it later might continue to grow and lead to glaucoma.

That suture of Prof. Kalt, and all the other sutures that only go through the superficial layers, or one-half of the cornea, may be used without danger.

For that reason, I say, if it is a question of suturing, in the cornea, let the experiment at first be with sutures going through only superficial layers of the cornea.

Now, I would like, if it is permitted, to take issue with our esteemed member, Dr. Savage, as far as the case of nausea in post-operative hemorrhages. Dr. Savage mentions that in one of his cases, nausea came on, and, as the cause of nausea, hemorrhage came about—that the strain was the cause of the hemorrhage.

By Dr. Savage—As the result.

By Dr. Feingold—That the strain was the cause of the hemorrhage?

By Dr. Savage—I think so.

By Dr. Feingold—I believe that I have the right to take a different view of it. I have had three cases of expulsive hemorrhage in the last three years, two in cases of absolute glaucoma, and one in a most simple cataract case. The accident occurred on the operating table in each instance. The whole thing was preceded by severe pain in the eyes and by nausea, but not by vomiting; so, nausea seems to be a symptom of that peculiar vascular condition of the individual, which will bring about the hemorrhage from the choroid, and that leads to expulsion of the choroid, retina and vitreous. What I mean is that nausea, and probably vomiting, is not the cause of the hemorrhage, though it may be one of the symptoms of the fact, just as the pain, that a hemorrhage has already occurred, but is not as yet visible to our eye, or that those symptoms may be caused by vascular disturbances (angiosclerosis), which vascular disturbances also lead to hemorrhages in the choroid—the expulsive hemorrhage.

Another question I would like to bring up is this: In a certain number of cataract operations we are having more or less difficulty with the angles of the wound, where the pillars of the coloboma or the iris are likely to become wedged in. It strikes me, gentlemen, that when we apply any sutures, we might have a little more incarceration of the iris at the angles where the lips of the wound come together. I am afraid that by the application of sutures we will really permanently hold the iris in this undesirable position when it might otherwise, in a number of instances, become disentangled again, through the consequent contraction of the sphincter, as long as the anterior chamber is open, or even through the slight gaping of the wound. All sutures will, as far as the iris is concerned, give the advantage of greater security against prolapse of the iris during the healing process.

The next question I would like to ask Dr. Ellett is the question of the swelling of the corneal wound. Prof. Fuchs has pointed out that imbibition of the cornea will produce a swelling and a cloudiness of the edges of any corneal wound.

In sutures of the cornea, when the sutures are made tight, will not that swelling bring about a cutting through or breaking of the sutures?

Furthermore, I would like to say that this question of suturing a wound has another good side, especially in glaucoma cases, where we often make the

incision with a small scleral flap. Here the suture is more easily applied, and I have personally done it in two instances where I was afraid of prolapse of vitreous and expulsive hemorrhage. Of course, that is entirely different from the method that Dr. Ellett has advocated here.

The Chairman—Is there any further discussion of Dr. Ellett's paper?

By Dr. Savage—I thank Dr. Ellett very much for that paper. I never have had any experience in suturing corneas, but I imagine it is a very nice thing, and before many years we will have good results, and probably many of us will be doing those operations. I have had within the last year or two one or two hemorrhages following cataract extraction. I had a hemorrhage recently, of which I shall speak in my paper, and shall not say anything further in regard to that right now. About two years ago I had a very severe hemorrhage in a case of glaucoma, and Dr. Feingold made the remark that he thought it was nausea that caused the hemorrhage. This case was coming out from under an anaesthetic and was very much excited. The patient vomited only once, but had nausea, and I had to remove the eye, I believe, the next day. I have been very fortunate in not having these hemorrhages after cataract extraction, and I hope I will not, but I think it is a very nice thing not to have these complications after cataract extraction.

In regard to the escape of vitreous, we can guard against these things, and I have a very interesting case, I believe, reported along that line, where there was profuse vitreous escapement. I only hope that good will come out of this paper of Dr. Ellett.

By the Chairman—The thing that appeals to me about Dr. Ellett's description of this operation, or about the use of the suture, is the opportunity to do the simple operation without iridectomy. In this way we can, to a large extent, obviate that fear, and for this reason it appeals to me. Besides that, however, it has other advantages. If there is no further discussion the chair will ask Dr. Ellett to close the discussion.

By Dr. Savage—Tell us about post-operative astigmatism.

By Dr. Ellett—I don't think it is effective one way or the other; post-operative astigmatism does not appear to be affected, as Prof. Kalt concludes, from his large number of cases, and as far as my view of the case goes.

In regard to Dr. Feingold's remarks on the swelling of the cornea on the edges of cornea wounds, I believe I have seen less infiltration of the cornea wound in those cases than in cases operated on by other methods.

By Dr. Feingold—Let us not call it infiltration. Infiltration generally means inflammation, and I mean just the mere discoloration of the cornea.

By Dr. Ellett—I have not noticed any difference in the cornea in this and in other methods. I have not seen the suture tear out at all, and I applied the same application in connection with the operation itself that I mentioned. I suppose I operate on more colored than white people, and I think you will agree that they are about the worst cataract patients that we have anything to do with; I believe the ones that I have gotten hold of have been. Unless the patient gives signs of being unusually quiet and tractable I remove the speculum as soon as the corneal incision is finished.

With the suture tight there is a wonderful advantage in the ease with which you can perform the toilet of the anterior chamber. Take the hospital where Prof. Kalt works; there are four surgeons. Dr. Dorsey was out when I was there, but, as you know, he had his own method of cataract operation or extraction, and other members of the staff did the same operation. Their advocacy of it was on account of this fact that it permitted a better toilet of the anterior chamber. I hope, within another year or two, to be able to report more cases, with a smaller percentage of prolapse of the iris.

THE PREVENTION OF DEFORMITY BY THE GENERAL PRACTITIONER. REPORT OF ORTHOPEDIC CASES.*

By DR. WILLIS C. CAMPBELL,
Memphis, Tenn.

In looking over the histories of one thousand orthopedic cases taken from the various clinics and private practice, I find that in 80 per cent of these disability could have been lessened, and in many instances entirely prevented. It cannot be expected that the general practitioner or surgeon be well equipped with special apparatus for the treatment of complicated orthopedic conditions, nor has he the required time, but he should be able to ameliorate or prevent deformity when only simple measures are required.

Undoubtedly a large per cent of the deformed and crippled is due to three main causes: (1) Failure in diagnosis. (2) Lack of care on the part of the physician. (3) Carelessness or obstinacy on the part of patient or guardian of patient. The last can

*Read before the Section on Surgery of the Southern Medical Association, Hattiesburg, Miss., Nov. 14-17, 1911.

usually be eliminated by explaining the true nature of the affection, and the consequences thereof, unless certain measures are instituted. Failure in diagnosis is usually due to a careless examination or ignorance, and much damage may be done before the facts are known. A short time ago a young woman was referred to me, who gave the history of having been treated three months by two eminent physicians, with a diagnosis of sciatica, when examination revealed an ankylosed hip at 45 degrees flexion, 30 degrees adduction, and internal rotation. No actual shortening, but four inches practical shortening. Skiagram showing bony ankylosis.

Rheumatism as a clinical entity does not exist, being several distinct diseases with different etiology and pathology, but there is so much variance as to classification by different authorities that a discussion is confusing. However, the old routine treatment for these conditions, by disregarding deformity and administering salicylic acid and a meat free diet, is to be deplored. Flexion is the position of ease, and is that position assumed by painful joints. Flexion with distortion from muscular or cicatricial pull in combination with any possible movement is the attitude in which ankylosis occurs. A stiff hip, flexed, adducted and rotated inward is a most distressing occurrence, and unfortunately a common one, while if ankylosed at 15 degrees flexion, and about the same abduction and external rotation (the most useful position), the individual may get about with scarcely a limp, and no other disturbance except when in the sitting posture, to which he soon adapts himself. An ankylosed knee is another common sight, which is most disabling. Ankylosed joints in non-tubercular affections are regarded by some as a reflection on the profession, but I am sure that all will admit, that with reasonable cooperation of the patient there is no plausible excuse for deformity. No expensive or complicated apparatus is needed to prevent these sad results. Extension by weight and pulley with the limb on a firm surface will often do wonders even after deformity occurs. Any simple splints, which may be made removable if other local treatment is desired, is the only other requisite. But *the parts must be held continuously in the most useful position until all joint symptoms subside.*

The management of tubercular joints is quite a different proposition, though proper treatment, if begun early, will give good end results in a large proportion of cases. Much benefit may be accomplished by plaster bandages with the elbow, knee and smaller joints, but the hip and spine require special apparatus, and some experience in the use of plaster of Paris; however, extension can always be applied to the hip, and in Pott's disease recumbency on a firm surface, as a padded board, will answer every purpose temporarily. The most frequent error is too short or intermittent treatment, as illustrated by the following:

Case 1.—Girl, age 4. May, 1911, began to limp, which was quickly followed by flexion of the hip to 90 degrees. From that time until recently was spasmodically and inaccurately treated. Was first seen October 15, 1911. Flexion of right hip 90 degrees, spine rigid and hip region exquisitely tender. Fluctuation over right trochanter (abscess). Skiagram shows tuberculosis of last lumbar vertebra and also head of femur. The child was placed on gas pipe frame, about which canvas was tightly stretched (Bradford frame), and extension made with weight and pulley, using only three pounds. In ten days the limb was in normal position and plaster cast was applied extending from ankle to axilla.

Case 2.—Girl, age 17, an old healed tubercular hip; 90 degrees flexion with adduction and internal rotation, marked compensatory lordosis, and equinus from 5 inches practical shortening, and 3 inches actual shortening. The entire head and neck destroyed and trochanter ankylosed to upper portion of acetabulum. Osteotomy of the femur at the level

of the lesser trochanter was required to place the limb in the most useful position.

Case 3.—A young woman, school teacher, who stated that she had been treated one year for "spinal trouble" with a brace, which was measured and fitted at some commercial store, and was her sole means of support, giving no relief, and a knuckle was gradually increasing in the spine. A closely fitted cast relieved every symptom, and she is now actively pursuing her occupation. (Braces, unless fitted properly, are a snare and delusion. To send a patient to a commercial firm for measurement and application of a brace gives about as good results as if one refers a sick man to a druggist.

Case 4.—Boy, age 6, who was brought to me on a stretcher with the history that he had not been able to walk since he was fourteen months of age, though he had been treated early, but from what I can gather intermittently and indifferently. There was a high dorsal tubercular spine, deformity marked and rigid. He had been the rounds, but the weight of the head had never been considered a factor in treatment. A Calot jack was applied, making hyperextension, and removing the weight of the head from the spine. Since which the child has been able to walk, run and play, as any normal child.

Hunchback is surely a very unsightly condition, which is absolutely preventable and can be relieved even after deformity if treatment is begun before bony ankylosis.

There is no field in medicine where prophylaxis is more important than in the early treatment of anterior poliomyelitis, an acute infectious disease, which claims a large per cent of cripples. With existing knowledge the diagnosis of sporadic cases is impossible. Deformity from this disease is caused by loss of muscle balance and superincumbent weight. Take, for example, simple equinus, the result, when the muscles of the anterior group of the leg are paralyzed, while those of the posterior group remain active. Muscle balance is lost, the powerful posterior group through the tendo Achilles draws the heel upward and the individual walks on the ball of the foot. The same, of course, applies to other distortions of the foot as well as those of the knee, hip and other joints. Loss of muscle balance not only causes deformity, but overstretching of the paralyzed muscles, so that those which have regained some power may be apparently paralyzed, as was beautifully illustrated in a case of equinus, for which I lengthened the tendo Achilles and cut the posterior ligament of the ankle joint. One week later she was able to raise the foot to right angles, while previously there was no demonstrable power in the anterior group.

The usual routine treatment is directed towards the cure of paralysis by massage and electricity, which may have some value and should be employed in every case. But by far more important in the successful combating of deformity early, followed by systematic training and exercise of the feeble musclese. I have seen cases of contracted tendo Achilles one week after onset of paralysis, and frequently at the end of six weeks well marked deformity. A few days ago I operated in the case of a girl age two and one-half years, which had been affected at three months (a very early time, though Duchenne reports one at twelve days), and was told at that time that nothing could be done until years later. Double genu valgum, flexion of both knees, and double equino varus existed, rendering walking impossible. Simple wooden, tin, pasteboard or plaster splints will meet all requirements to hold the parts in their anatomical position and avoid loss of muscle balance. This should be done as soon as diagnosis is made and when the child is able to walk suitable braces will enhance the chance of regaining power.

The following illustrate some of the many conditions which might have been prevented:

Case 5.—Girl, age 12, whose limbs were so distorted that she had been unable to walk for nine years. The hips were flexed until the

knees touched the abdomen, marked genu valgum with inward rotation so that the patellae faced each other, and feet in rigid equinus. At present, after an extensive operation, she is able to walk through the aid of braces and crutches.

Case 6.—Jewish boy, who was affected at eighteen months with involvement of entire left lower extremity, but after a few years was able to walk with poorly selected braces and crutches. I first saw him last April and found the following: Paralytic dislocation of the left hip, flexion of left knee, muscles of left leg with practically no power, the foot in loose equinus, "drop foot." Actual shortening, 4½ inches. The limb, for practical purposes, was a mere appendage. By two consecutive operations the tendo Achilles was lengthened, silk ligaments inserted to hold the foot at right angles, knee straightened and head of femur ankylosed in acetabulum by open operation. At present there is only ¾-inch shortening, the foot is held at right angles, the knee straight, and the hip firmly in place as shown by the skiagram. There is decided improvement in the nutrition of the entire member. Crutches have been discarded and he is now able to undertake any reasonable occupation.

Case 6.—Illustrates a valgus or paralytic flat foot, the result being shown in a photograph taken three months after transplantation of the perineus longus tendon through intermediate silk (after Lange) into the inner aspect of the Scaphoid, and restoring muscle balance.

Mild congenital equino varus may often be corrected by simple manipulations if begun at birth. The earlier the treatment the better the functional result, though there is no case which cannot be cured regardless of age or severity. Early treatment in lateral curvature will render a very obstinate condition simple and easy.

Congenital dislocation of the hip is another error of nature, where early diagnosis and treatment is essential. I have reduced two this summer by the bloodless method, one of which Case 7, shows an attempt to stand two weeks after operation. The child was able to run about at the end of one month.

Occasionally it is difficult to impress the parent or patient with the importance of long-continued and persistent treatment, but as a rule the physicians' time is so taken with the more acute affections that little attention is given to a field, where the results are slow but brilliant. In all joint cases the parts can be held in the most useful position, and even should ankylosis occur there would not be the added disadvantage of deformity. Early and accurate diagnosis often avoid future operations and long confinement of the patient, which may require such financial sacrifice that relief is never sought.

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DISCUSSION.

Dr. Scott, Birmingham.—I am sorry I did not hear the first part of Dr. Campbell's paper, but I don't believe we ought to pass the paper over without referring to the apparatus on those cases. I think that most men are inclined to put on apparatus. I do not mean that apparatus should not be used, but I do think that the apparatus should be just as carefully adjusted as the eyes or nose or anything else. The great tendency seems to be when a man has one of those cases to wait and try to brace it up. A brace, when it comes to be used, does no good to the child except in the correct position, and the tendency is to work against the brace all the time and reduce the deformity. They should hold in an upright position. Most of the braces I have had there was no attempt to hold the leg in the over-reached position, and I think the main thing in a deformity is to keep the leg in a correct position. I just want to call attention to the fact that braces are used badly. It is no harder to get a perfect piece of apparatus than a poor one. The tendency is to put on the apparatus without properly fitting it.

By the Chairman.—This paper is more interesting than anything that the ordinary surgeon handles, and it ought to be attractive.

INSANITY—ITS RAPID INCREASE AND PREVENTIVE MEASURES.

By J. M. BUCHANAN,
Superintendent East Mississippi Insane Hospital, Meridian.

Statistics gathered from hospitals for the insane show marked increase of insanity, and while it may be true that the "diminishing aversion to the public hospital, heretofore considered soulless if not cruel," together with better facilities for caring for delinquents, have increased hospital population, yet the fact remains that there is a pronounced increase of insanity beyond the increase of population.

In a recent address before the Alabama State Medical Association, Dr. Searcy, Superintendent of the Alabama hospitals, stated that in the past ten years the admission to the hospials had been 45 per cent, while the last census showed only 19 per cent increase of population, and that figures similar to these can be shown over the whole country.

For this period the hospital population in Mississippi has increased a little over 30 per cent, but that does not include all the insane of the state, for there are many insane negroes who cannot be admitted to the hospital on account of the already overcrowded wards.

Epileptic colonies, schools for feeble-minded children and other custodial institutions all show increase in population, and all defectives are not under custodial care.

Dr. Goddard, Superintendent of the School for Feeble-Minded Children at Vineland, N. J., has recently stated that there are three hundred thousand feeble-minded persons running at large in the United States, and that 80 per cent of the feeble-minded came from 19 per cent of the total population.

Another fact is a steady increase in nervous and brain troubles. Just what proportion of the whole nation is affected is a difficult proposition. The report of the New York Commission in Lunacy for 1909 gives one insane person for every 275 of population in New York, but this only includes those who are cared for in public or private hospitals, and does not include the feeble-minded and other defectives not under custodial state care.

Some years ago an estimate of all defectives was made in Bern, Switzerland, and for that canton the ratio was one defective for every 117 of population.

Heredity, ill-health, stress and strain, somatic diseases, syphilis, diseases of the nervous system, alcohol, narcotics and other toxic poisons are given as the principal etiological factors in producing insanity. To this list environment, with the change in the political, business and social life of the masses must be added, for the fact that insanity is increasing at a rapid rate in civilized nations, depends to a very great extent upon consequent changes of environment.

'The first apparent object of civilization is to set equal valuation on human life and to prolong the lives of all human beings alike." The more civilized a nation becomes, the further it departs from the old Spartan custom of putting out of existence those individuals who, because of mental or physical defects, were useless to the community at large. This advanced civilization, with its higher conception of duty to humanity, has the effect of lengthening the lives of the less capable, so that they reach maturity to marry and beget weaklings, thus aiding in the survival of the unfit, and increasing the number of deficients.

Environment shows its effects in another way, for where an individual with an inherited weakness falls under an unfavorable environment, there is almost sure to be mental breakdown.

HEREDITY.

Referring again to insane hospital statistics, we find that heredity plays a most impor-

tant part in the etiology of insanity. These statistics are not altogether accurate, because there are many cases in which the family history cannot be obtained, but of the total number with known histories, the report of the New York Lunacy Commission gives 51 per cent in New York; the Michigan Asylum for the Insane shows 56 per cent, and the Rhode Island Hospital for the Insane 54 per cent, showing heredity. Other reports give about the same percentages.

The percentage of people with neuropathic conditions, and who are capable of transmitting the neuropathic make-up, has been estimated at 30 per cent of the total population. Therefore, in the study of insanity, we must not be content with ascertaining the existence of psychoses in the ascendants, but we must also consider the hereditary equivalents that go to make what has been designated, "the neuropathic make-up."

Some of these equivalents are epilepsy, chorea, neurasthenia, general nervous diseases, feeble-mindedness, drunkenness, etc. These equivalents interchange from one generation to another, for it is the unstable organization that is inherited, and not a particular psychosis.

The subject of eugenics is now attracting wide attention, and many societies of scientific men are making research regarding the question of heredity. These societies of eugenics are trying to teach us, under the Mendelian law, how we may do for the human race, what Burbanks is doing in plant life, and what stock breeders are doing in evolving thoroughbred horses, prize milk producers in cows, and champion layers in hens. What Luther Burbanks is doing in crossing and evolving new and improved plants and fruits, and the fabulous prices that are being paid for prize horses and cattle, not to mention ten thousand dollars for one hen, show conclusively what can be done by selection.

In 1865, Mendel, a German monk, made experiments by crossing plants, and later published his reports, but they attracted no attention until about 1900, when others began to investigate along these same lines and rediscovered that certain traits were transmitted, not through chance, but according to certain rules which govern hereditary transmission and could be reproduced.

"The fundamental principle of the Mendelian law lies in the fact that the total inheritance of an individual from his parents is divisible into unit characters, each of which is inherited independently of all the rest. The unit substance upon which the inheritance of any character depends, is called a determiner. A certain character is said to be dominant when a determiner is present in the germ plasm, and it is recessive when there is a lack of a determined in the germ plasma."[1]

To make this point clear, Prof. W. E. Castle, in his "Heredity," uses this illustration: "If a black rabbit of pure race be mated with a white one, the offspring will all be black; none will be white. To use Mendel's terminology, the black character dominates in the cross, while white recedes from view. The black character is, therefore, called the dominant character, white the recessive character. But, if now two of the cross-bred black individuals be mated with each other, the recessive white character reappears on the average of one in four of the offspring." The black color predominates, because there is a lack of some constituent in the white, and this lack of a determiner produces the albino rabbit, but after being mixed, the black and white characters separate. Two pure blacks can reproduce only blacks, and pure white only white offspring.

"It is obvious that any character an individual inherits comes from two sources, namely; both parents, and the inheritance is duplex or simplex according as it is inherited from both or one parent.

"It has been shown by the laws established by Mendel that the law governing the traits of heredity hold good not only in plants and

lower animals, but also in regard to man, at least as regard to certain physical characters, such as the color of the hair and the color of the eyes."[2]

Working with this fact as a basis, Dr. A. J. Rosanoff, of King's Park Hospital, has made some valuable records regarding the laws of heredity, showing that certain forms of nervous and mental diseases are transmitted from generation to generation. These facts are shown not only theoretically, but experimentally with 72 families, representing 226 different matings, with a total of 1,097 offspring.

We cannot give here in detail the manner in which the matings were made during the investigation, but by courtesy of Dr. Rosanoff we present his conclusions:

"1. The neuropathic constitution is transmitted from generation to generation in the manner of a trait which is, in the Mendelian sense, recessive to the normal condition. Rules of theoretical expectations are accordingly as follows:

a. Both parents being neuropathic, all children will be neuropathic.

b. Both parents being normal, but with the neuropathic taint from one grandparent, and the other parent being neuropathic, half the children will be neuropathic and half will be normal, but capable of transmitting the neuropathic make-up to their progeny.

c. One parent being normal and of pure, normal ancestry, and the other being neuropathic, all the children will be normal, but capable of transmitting the neuropathic make-up to their progeny.

d. Both parents being normal, but each with the neuropathic taint from one grandparent, one-fourth of the children will be normal and not capable of transmitting the neuropathic make-up to their progeny, one-half will be normal, but capable of transmitting the neuropathic make-up, and the remaining one-fourth will be neuropathic.

e. Both parents being normal, one of pure normal ancestry and the other with the neuropathic taint from one grandparent, all the children will be normal, half of them will be capable of transmitting the neuropathic make-up to their progeny.

f. Both parents being normal and of pure normal ancestry, all the children will be normal and not capable of transmitting the neuropathic make-up to their progeny.

These laws explain some of the puzzling questions of heredity—namely: Atavistic and collateral heredity. We all know that children inherit traits from their parents and grandparents, and that some take after their uncles or aunts.

As yet the Mendelian laws can be said to be only theoretically established; when they shall have been fixed we may be able to predict certain traits, both mental and physical, for our offspring. This will also enable us to answer the question whether, under conditions of ancestry, it would be safe for certain persons to marry.

The Jukes, a famous family of criminals, have often been cited as a most glaring example in heredity of crime, pauperism and insanity. More than two-thirds of the 1,400 descendants of the original founder of the family were criminals, feeble-minded persons or degenerates. But this is not an isolated case, for recent investigation made at the home of the feeble-minded children at Vineland, N. J., the history of an idiotic woman rivals, if not surpasses, the Jukes family.

In 1782 a young man of normal family wronged a feeble-minded girl. This feeble-minded girl gave birth to a son of feeble mind, and this son became the father of thirteen children, seven of whom were idiots. One of the feeble-minded sons married a feeble-minded woman, and all the children were idiots. The record of nearly all these descendants were traced to discover that in 1,146 descendants 580 were feeble-minded, many of them with criminal records; there were also numerous epileptics, showing the terrible con-

sequence of this unfortunate union. This same young man later married a normal woman, and Dr. Goddard traced nearly a thousand of his descendants, and not a single case of feeble-mindedness was found among them, showing conclusively that the transmission of degeneracy came through the degenerate mother. These extreme cases have been cited to emphasize the danger of hereditary transmission, but results as convincing as these are shown on a smaller scale by investigations at the School for Feeble-Minded Children of typical neurotic families.

In view of these facts, there is only one question to be considered in regard to the matter, and that is to stamp out hereditary diseases. This can only be accomplished by preventing the offspring of those who are unfit. This applies not only to those who are actually insane or defective, but also to those who are predisposed to crime and insanity, and to those who, by heredity or otherwise, have uncontrollable desire for alcoholic drinks or narcotics. In fact, it should apply to all who have the neuropathic make-up. That some means of checking the rapid increase of defectives is demanded by society cannot be denied, but how this can best be done is a question deserving much serious thought. Segregation and confinement of all is impossible on account of the cost as well as other reasons.

Legislative measures have been adopted in some states both for the prevention of marriage of the unfit and unsexing inmates of insane hospitals and penitentiaries, but so far no law reaching far enough has been enacted to be of much value. Any law bearing on the subject of prohibitive marriage must be national and the same in all states, for what is the good of one state prohibiting marriage of persons with certain diseases when bordering states have no restrictive laws. It is said that "Love laughs at locks and bars," and the same may be said of laws, for it is to be remembered that we are dealing with human beings possessed of uncontrollable appetites who would oppose such restrictions.

If surgical measures for unsexing the unfit are confined to inmates of insane hospitals and penitentiaries, especially when limited to incurables, no appreciable effect will be had in the next generation, for these classes are recruited in a large majority from all deteriorating ranks of society, and it will be impossible to place surgery where it would do the most good.

That procreation by confirmed criminals, the insane and feeble-minded is a menace to society is admitted by all thinking people, but it must be remembered that there is danger from any form of nervous instability, and restrictive measures should not be confined to incurables.

I have seen both men and women in the hospital with which I am connected be improved and carried home, where children with an insane diathesis would be born. The bringing into being of such children could have been prevented by a slight surgical operation.

I have had no experience in doing vasectomy, an operation that is harmless, but effective, yet so simple that no description or comment is necessary. I have had women made sterile by ligating or occluding the Fallopian tubes, with desired results. This operation is easily performed and in no wise interferes with any of the natural functions, except to prevent the passage of the ovum into the uterus.

The greatest good along these lines must come through education, and laudable attempts are being made to increase general information on the subject of sexology. How to teach this to the innocent is a subject well worth consideration. Possibly it can be done through the science of biology, in the study of species, both in plant and animal life. The education begun in school must not cease there, for unless the mother can be taught the great responsibility she owes to her progeny,

but little good can be expected. Emmerson has said: "A man is what his mother made him." Education and environment may accomplish much, but no mother's love or maternal care after birth can ever make up to the child for the sins committed against it while forcing it into being unasked, to suffer the penalty imposed by nature for broken laws.

FAULTY EDUCATION.

In the beginning of this paper stress and strain were mentioned as factors in the causation of insanity, and this strain often begins with the education of the child. It is not the fact that the curriculum of the public school is too strenuous for the average child, because it has been estimated that 75 per cent of those who enter school are mentally capable of completing the course.

If the public school system is to be criticised, the fault lies in the fact that, having made a fixed curriculum, every child is expected to take the entire course through the ten or twelve grades. Some can do this without injury. Others may succeed in finishing under great mental and physical strain. Not a few will be wrecked on the idea that they are not worth the while, because of indifference and lack of interest, when the real trouble was in expecting the child to study when it was not able to study.

Commonwealths are yearly appropriating millions under the fallacy that education as given in our schools will be a cure-all for deficiency in our social and political system. Surely much good may be accomplished in educating the masses, provided some selection is made in the choice of those who are to be given the advantages of higher education.

In the organization of our schools, the first duty should be the study of the pupils to determine the capacity of the individual; and the keynote should be what particular form of education is best adapted to each child. The expert educator must be able to properly organize his classes along these lines.

Today an intelligent farmer analyzes his soil before sowing the seed, and he would be regarded as a poor farmer were he to attempt to raise any kind of crop on soil unsuited for that particular plant. He is expected to know what ingredients the soil may need and then apply the correct fertilizer before sowing the seed. Yet the schoolmaster, the expert set aside by the state for the purpose of sowing seeds of knowledge, keeps on sowing year after year, even though he raises poor crops, without asking any particular questions in regard to his soil.

No child can be expected to do efficient work if he is not able to work. Children with all sorts of nervous ailments are sent to school and are compelled to do the same lessons as the rest of the children. No special attention is given to physical defects, such as bad eyes, poor hearing, adenoids, poor blood and many other ailments. Is it any wonder, then, that there are so many children who are averse to going to school when they are expected to study and are in no condition to study? Statistics compiled by the United States Bureau of Education reveal the fact that of 5,000 children entering classes of the primary schools, but 73 of them remain in the schools and complete the high school course.

This great falling away from school cannot be attributed altogether to physical defects and incapacity of the children, and by far the greater number quit school because the school has failed to interest them, for the great majority do not fit the common groove of the public school. Technical and manual training should form a part of the course, and when normal children are found to have a dislike for literary work, they should be placed in vocational schools; in that way they would become interested and develop into the highest type of skilled workmen.

As an evidence of the different grades of

mentality to be found in public schools, the following extracts from a paper by Dr. H. H. Goddard, of the Training School at Vineland, N. J., is of interest:

"The study recently made by the Vineland laboratory of mental development of the children in an entire school system of 2,000 children shows 3 per cent of the first five grades to be feeble-minded; 15 per cent were two and three years backward; 78 per cent were normal, and 4 per cent super-normal.

"The problem before the school authorities of the country today is the segregation of these children—the selecting out from the regular classes defectives and putting them together in special classes under specially-trained, expert teachers, where they shall be trained to do whatever their capacity permits, but shall not be worried with those abstract subjects of reading, writing and arithmetic, which they can never do."[4]

The good of society demands that all defective children be made sterile before they go out into the world. If such a course as this were pursued, many of these abnormal and backward children could be made self-supporting and the community would be saved many criminals and defectives.

In this matter we are sadly lacking, for while we are boasting of the millions that are being spent for the common schools, it is to our shame that there is not a training school for the feeble-minded in the South, and only a few Southern States make any provision whatever for the morally deficient or criminal child.

If I have spoken at length on heredity and child training, it is because these are the most potent factors bearing on my subject. It is important that only normal children should be brought into being, and equally as imperative that these children should be educated and trained in a way to emphasize their best traits and be aided to develop into normal men and women. These are questions of serious import to every student of eugenics.

DETERIORATING AGENCIES.

While heredity and environment, as has been described, may account for a large increase of defectives, it does not account for it all. There are certain deteriorating agencies that are being extensively used among all classes that are aiding in developing nervous instability. Chief of these are alcoholic drinks and toxic poisons. The immediate and direct effect of alcohol, morphine and cocaine are often apparent, and a striking example is the use of cocaine by negroes, which would ruin the race in a few years if the sale were unrestricted. The effect of the milder drugs are not so manifest, but all in the end have a tendency to produce a neurotic diathesis. Accurate statistics on this subject are difficult to obtain, because there are so many cases where it is impossible to get reliable histories, but the report of the New York Lunacy Commission of 1909 gives alcohol as the cause of insanity in 46 per cent of the admissions to the New York hospitals, and reports of the hospitals of other states show large percentages of neuroses due to alcohol and narcotics.[5]

Perhaps a more general awakening to this danger than any other is being aroused all over the country, and prohibitory laws to prevent and restrict their sale have been enacted by almost every state of the Union.

Another thought in our development is to be considered, for while improved environment has given the less capable better opportunity to live, and this class, being prolific, are multiplying at a rapid rate, unfortunately the contrary has been the result in the more capable who, for personal and social reasons, are multiplying at a less rate, and we hear much about race suicide.

Another cause that makes up the difference between yesterday and today is that the strenuous life has come all but too soon. Too much demand has been made upon the brain and nervous system, and not enough attention has been given to strengthening the nervous organization. The maddening rush, finan-

cially, politically and socially, as well as the expansion of knowledge, has been in advance of the capacity of the brain, and in consequence we are rapidly developing a nervous instability, producing what we term the neuropathic make-up.

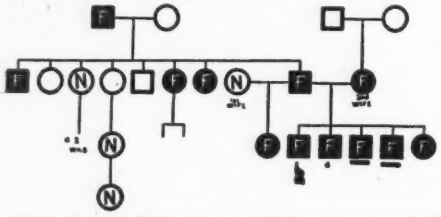
References:
1, 2 and 3. A Study of Heredity in Insanity in the Light of the Mendelian Theory. A. J. Rosanoff, M.D., and Florence I. Orr, M.D. American Journal of Insanity, October, 1911.
4. Dr. H. H. Goddard, The Elimination of Feeblemindedness.
5. Report N. Y. Lunacy Commission, 1909.

Through the courtesy of Dr. H. H. Goddard of the School for Feeble Minded Children, Vineland, N. J., and Dr. A. J. Rosanoff of King's Park Hospital, N. Y., I am able to present the following charts showing the transmission of traits and mental defects. The first three are from Dr. Goddard showing transmission of feeblemindedness.

KEY TO CHART.

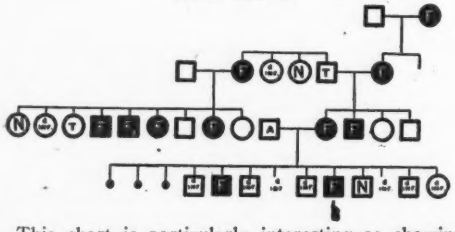
A square indicates male. Circle indicates female. A, alcoholic (habitual drunkard.) F, feebleminded. N, normal. T, tuberculosis. small black circle, miscarriage. B, born. D, died. Inf., infancy. Ileg., illegitimate. Hand shows child under observation.

Chart No. 1.



This chart emphasizes the fact that two feebleminded persons can have only feebleminded children.

Chart No. 2.



This chart is particularly interesting as showing the mental defect running through four generations, and through the mother's side in three of these, but there is defect on the father's side in the third generation.

Chart No. 3.

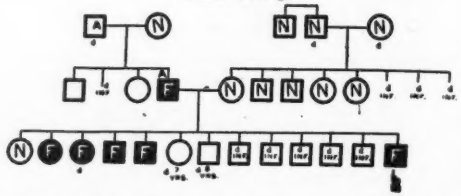


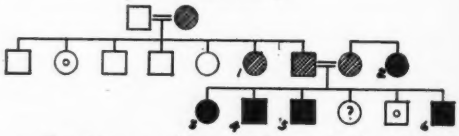
Chart 3 is instructive, in that it seems to show the effect of a combination of alcoholism and mental defect in the father, when the mother's family is good—herself and sisters being normal. The result of this woman's marriage with a feebleminded alcoholic man is five feebleminded children, five that died in infancy, two others that died before their mental condition could be determined, and one normal child. Apparently a clear case of transmission through the father.

The following charts of Dr. Rosanoff are given to illustrate transmission of traits and defects from neuropathic individuals.

KEY TO CHART.

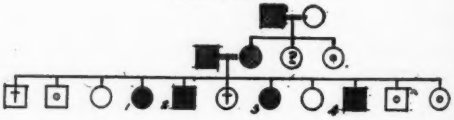
A square indicates a male subject; a circle indicates a female subject; square or circle equals normal subject with normal progeny; black square or with cipher in center equals normal subject without progeny; square or circle shaded equals normal subject with neuropathic progeny; black square or circle equals neuropathic subject; square or circle with plus in center equals subject died in childhood; square or circle with question mark in center equals data unascertained.

Chart No. 7.



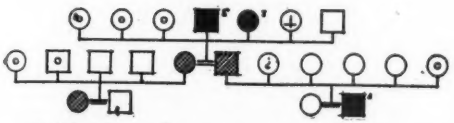
1. Daughter was Sister of Mercy in Australia; is said to have died of homesickness.
2. Feebleminded, eccentric, laughs without cause, says "I don't know" in reply to simple questions.
3. Died insane at asylum in Cork.
4. Was insane at asylum in Cork; was discharged improved, but is still queer.
5. Dementia praecox, at State Hospital.
6. Dementia praecox, at State Hospital.

Chart No. 8.



1. Nervous temperament, fidgety, has nervous son.
2. Dementia praecox, paranoid, in State Hospital.
3. Convulsions following smallpox at the age of 5 years.
4. Died in convulsion at the age of 1 year.

Chart No. 10.



1. Quick tempered.
2. Became melancholy, due to disappointment.
3. Dementia praecox, paranoid, in State Hospital.

These charts show how deficiencies in offspring are intensified when two neuropathic subjects are mated.

DISCUSSION.

Dr. J. H. Fox, Jackson, Miss.—Dr. Buchanan did not mention one point in his paper which I desire to emphasize, and that is the increase of insanity among the negroes from the habitual or constant use of cocaine. We find in our institution at Jackson that the number of insane negroes is rapidly increasing. In fact, at the present time there are over one hundred and fifty applications on file, and the jails all over the state are crowded because we have not the room for them.

Syphilis, it seems to me, is another prominent cause of insanity. Alcoholism, as he has mentioned, has its place in the production of insanity. The reason why I mention syphilis is because I recall to mind a case I saw recently which had been treated by another physician. The doctor in sending the patient in gave a history of the patient having had syphilis. He was admitted and had an epileptic attack on the bench before he was sent to the ward. He was subsequently sent to the ward, and had three or four epileptic attacks. The doctor in charge of the service began the mixed treatment and in less than a week's time the patient did not have another epileptic attack, and during the entire time he stayed at that institution he was free from the attacks, his mental symptoms cleared up entirely, and he broke out and ran away.

Dr. Fred J. Mayer, Louisiana.—I would like to ask Dr. Buchanan what percentage of insanity in Mississippi is due to alcohol directly and by hereditary transmission. In a recent conversation with a talented Bavarian connected with one of their great insane asylums, he stated that sixty per cent of the cases of insanity in the German asylums was referable, directly and indirectly, to the use of alcohol (and he did not include Munchen beer in the category of alcoholics). A distinguished Mississippian, Dr. F. E. Daniel, editor of "Red Buck," in an address on the "Elements of Decay in American Civilization," said: "I name as the most potent factor in the swift decay of the race—the worm in the bud gnawing at its vitals—whiskey and consumption." As President of the International Congress on Tuberculosis in 1906, he said: "Whiskey and consumption follow the Bible and the flag as the handmaids of civilization, and they are as destructive as a pestilence." In the former address he says: "The population of Texas in forty-five years to 1904 increased to 504 per cent. The insane in Texas in the same time increased 6,800 per cent, a ratio of 13.7 to 1. In 1860 there were fifty insane people in Texas and their maintenance cost the State $12,000. These figures are from a public and published address by Professor M. L. Graves, M.D., University of Texas, late Superintendent S. W. Insane Asylum, San Antonio, Texas. In 1909 there are five thousand insane in Texas, five hundred in jail for lack of asylum accommodation, and the cost to the state for the five years to 1907 was $3,555,000, an average of $707,000 a year. For 1904 alone the cost was $784,000. These figures are taken from the Comptroller's books."

Dr. Daniel writes that since 1910 additional accommodation has been provided and that most of the unfortunates have been taken care of. The appropriation for them and the buildings for the year ending August 31, 1910, was $854,835. Reverting to his address, which I regret the limits of this discussion will not permit to quote *in extenso*, he says: "According to Dr. Graves, sixty per cent of the insane in Texas is the result of alcohol, directly and by hereditery transmission; while Dr. B. M. Worsham, Superintendent of the Austin (Texas) Insane Asylum, puts it at 95 per cent." Further along he gives official figures from superintendents of twenty-two asylums in sixteen states which gives an average for each state of 46.75 per cent and for each asylum 34 per cent. "The entire revenue to Texas from liquor licenses, according to Judge T. W. Gregory, of Austin, in a public address is $600,000. It will be seen that this large sum falls short by an average of $107,000 a year of paying for taking care of the insane, from sixty to ninety-five per cent of whom are, according to official reports of the superintendents of two of our four asylums, victims of drink and hereditary transmission of the curse; while Judge Gregory declares that the cost of enforcing the criminal laws in Texas exceeds the entire revenue from liquor license, and that fully fifty per cent of crime is the result of drink. The figures are astounding. To continue a policy the results of which are so destructive to the human family, so fatal to our race integrity, is race suicide, nay, it is idiotic. We let these people marry and multiply. The insane, the criminal, the consumptive the scorbutic the syphilitic, aye, even the paupers on the poor farm marry with the sanction of the law and the blessings of the church. That is sentiment; science would insist upon stirpiculture—the rational propagation of the human species—else the fittest cannot survive. Lydston in his recent epoch-making book, "Diseases of Society," says: "That a feeble dude, with a monocle in his eye, gazed through the bars of a pasture upon the splendid proportions of a magnificent bull, and addressing the bull, said, 'Bah Jove! Old fellah, you are a splendid specimen of your kind, dontcher know?' The bull replied, 'I am sorry, Sonny, that I cannot say the same for you, you are a miserable specimen of yours, dontcher know? But I will give you a pointer: If the same pains and care had been taken in the selection of your ancestors that were taken with mine, you would not have been the miserable little failure you are, dontcher know?'"

I find with regret that I have exceeded my time for discussion of Dr. Buchanan's most admirable paper; the question of insanity, the causes, its alarming increase and prevention does not receive the public discussion it deserves, both from the scientific aspect and the state; the public should be aroused to the menace, both from a humanitarian and economic point of view. Without in any sense desiring to inject a discussion of prohibition which

does not prohibit, the facts as recited are appalling and bear out the truth of the aphorism of Lombroso: "A single embrace in a moment of drunkenness may be fatal to an entire generation."

Dr. Louis LeRoy, Memphis, Tenn.—While I have no intention of injecting any remarks of a temperance nature into this discussion, still I believe the arguments that have been advanced against the use of alcohol are sufficiently well grounded not to require further argument, and yet from a temperance standpoint, I think most of the statistics collected in that line lay the blame upon alcohol for the entire trouble, whereas alcoholism is simply a symptom of other conditions. When we consider the various types of neuropathic organizations, the various types of depravity, the strain which comes from excessive work, the strain which is going to come from our unbalanced economic conditions, when we consider the unpaid classes with their excessive demands for keeping up appearances, associated with malnutrition and poor hygiene, even in the presence of fairly comfortable external appearances, we have there conditions which demand alcohol simply as an aid, and it is held to blame for the trouble. It is only a side issue in the undermining process, and has only been an element in hastening the symptoms which would otherwise have appeared just as completely if alcohol had not been used. I am willing to admit that it may hasten the process. Some people in otherwise good health will abuse alcohol and start a train of degeneracy, but alcohol cannot be blamed for all evils. The same is true with reference to the use of morphine, and to a lesser degree of cocaine. Not all depravity is due to the use of alcohol or to the use of narcotics, and it is not alcohol alone which makes the degeneracy we find, but the degeneracy *demands* the alcohol or narcotic.

Dr. Ralph N. Greene, Chattahoochee, Fla.—Dr. Buchanan has brought before us a very interesting but complex subject. Alienists in their almost aimless gropings into the most chaotically distorted branch of medical science, psychiatry, have failed to produce much of scientific interest to the surgeon or internist. However, through the epoch-making discoveries of Dr. Searcy, of Alabama, and Dr. Babcock, of South Carolina, in the study of pellagra, we have had a most widespread interest manifested in the care and treatment of the insane. The odium which was formerly attached to the name and association of places for the care and treatment of the insane have been largely removed. There has been an enlightenment among the general public. They have come to the realization of the fact that the insane man is no longer an object of repulsion, but that he is a sick man, entitled to all of the generous aid and sympathetic help that an educated and charitably disposed public can give and to all the aids that medical science can summons.

As Dr. Buchanan has said, the prevention of insanity is probably one of the greatest elements in the sociological development of a state. It has been shown that there is a definite financial value in one's citizenship, and it has also been proven that the average life of the chronically insane individual is of certain duration; that the cost of his maintenance in a hospital for the insane for this period amounts to a certain number of dollars, and this, together with the loss of his financial value as a citizen, is several thousand dollars. Therefore, it can readily be seen that from a financial viewpoint at least, that it is highly necessary to exert every effort towards reducing the number of mental cases in each state. There are probably only a few present here today who have not had, at some time, some relative, either near or remote, to fall a victim of mental disease and by reason of such unfortunate affliction be sent to some hospital for the insane, and there, at its best, to live in sordid surroundings until death's call may relieve them. The large centers are inaugurating psychopathic wards in the general hospitals. Heretofore friends have kept patients in the incipiency of mental disease in the privacy of their homes for too long a period. But now these people have been impressed with the fact that the insane often respond to treatment and those patients more often than formerly have come early into the hands of a competent alienist and have had better prospects of recovery than if received later.

Research work is being done in certain of the more prominent mental diseases, and it has been my intention to present at this meeting the results of a study if nine partial thyroidectomys that had been done in the Florida Hospital for the Insane. These cases were done for the relief of dementia praecox, and although the results were unsatisfactory, the effort at least proved the possibility of some such simple procedure. Relieving cases that were heretofore considered chronic and hopelessly incurable.

Hookworm infection has been shown in our experience to play an important role, as a predisposing factor at least, in the production of insanity. Among nearly five hundred white patients we found fifty-four per cent suffering from intestinal parasitic infection. After treatment many of them have shown marked mental and physical improvement.

Dr. Buchanan referred to the importance of surgically incapacitating those individuals who were suffering from definite psychoses, from the further propagation of the species. Legislative authority should be given every officer of hospitals for the insane to perform vasectomy or other proper operations in selected cases in which hereditary taint might be an important factor.

Dr. John L. Jelks, Memphis, Tenn.—Apropos of the remarks made by one of the speakers concerning intestinal parasites and their relationship from an etiological standpoint to insanity, I wish to refer to one point that I have noted in my investigations along this line. As I have made a special study of intestinal parasites for a number of years, I have made it a rule during the last two years to ask very pointedly a question with reference to the existence or non-existence of intestinal parasites.

After having obtained the confidence of these patients, I have found in most instances that their answers were entirely confidential and could be relied on, I learned that in fully twenty-five per cent of all cases of chronic amebiasis, with defective elimination, defective emunctory function, the patients had at some time contemplated or considered suicide.

That is the point I wish to add to the remarks that were just made.

THE PSYCHIC CENTER.*

By J. T. SEARCY,
Tuscaloosa, Ala.

The time is come when we can indulge in some generalizations about the nervous system.

Every nerve center, however simple or complex, is the middle of an arc of living, sentient nerve action. Towards it come sentient, afferent fibers bearing living action to it, and living efferent fibers bear executive action from it; while the center itself adjusts the action sent from it to the action it recieves, for the purpose of control, with a grade of intelligence that belongs to it in its particular sphere. Every nerve center, therefore, is tripartite in its functions. It receives, it adjusts and it emits with its particular grade of simplicity or complexity of function. These nerve-center functions range in grade of sentiency from that of the simplest little ganglion in the periphery to that of the most complex cerebrum. Sentiency is the property of all nerve centers through different grades, until it reaches the grade of consciousness in the complex psychic center; whose tripartite functions reach the grade of learning, reasoning and executing.

It is proper to divide the nervous system into two parts or departments, one having functions that relate to the outside of the man, to his environment; and the other, functions that relate to internal activities. The conscious, convoluted, cerebral cortex is the center or group of centers for the department, whose functions relate to the outside of the man, and those lower tracts and ganglions, that control and adjust the actions of the internal organs, are the middle of the internal department. We can readily say the cerebrum, particularly in its convoluted cortex, is the center of one department, which we can call the psychic department, and the lower centers constitute the middle of the sub-psychic department.

These departments are quite distinct and separate from each other, one engaged in external work, while the other engages in internal work. Their separateness and independence of action are illustrated in many ways. In natural sleep, the psychic center is suspended in function, while the internal centers continue to equilibrate the internal organs, the lungs, the heart, the stomach, etc. In the artificial sleep of surgical anaesthesia the chemic action of the anaesthetic stops all the action of the most delicate cells and fibers of the conscious cortex, while, if the quantity in the blood is properly limited, it does not stop the action of the less delicate cells in the centers of internal life. If enough is administered it will, however, stop the action of the sub-psychic centers—when the man dies. The nerve conditions of shock, of concussion, and of syncope also, in non-fatal cases, illustrate the separateness of these two departments—the psychic center is suspended in function, while the sub-psychic centers continue in action.

While the psychic and sub-psychic centers are quite separate and distinct in their functions, they are but parts of a whole, and are not entirely independent of each other. Nerve lines connect them and render them "sympathetic" the one with the other. Happy, harmonious, natural, normal action in either departments affects the other advantageously, while unnatural, abnormal, disturbing action affects the other disadvantageously. For instance, disturbing action in the brain affects injuriously the action of the lungs, the heart, or the stomach, and, vice versa, disturbing ac-

*Read before the Section on Surgery of the Southern Medical Association at Hattiesburg, Miss., Nov. 14-17, 1911.

tion coming from an internal organ impairs brain action.

Psycho-therapy rests upon this physiological fact, impaired internal functions are improved by happy, suggested, hopeful action in the psychic center. Psycho-therapy is generally used in medical practice. Regular medical practitioners use it advantageously, and the practice of irregular practitioners is principally based on it. An encouraged, hopeful, psychic center, however rendered so, by suggestion or assurance, affects beneficially the internal organs. Human credulity in the assertions of others is very great, and is often imposed upon in dishonest practice.

The object of this paper is to emphasize the importance of the psychic center. As a nerve center it is vast in size and complexity of structure compared with other centers, and its functional importance vastly transcends the value of any other center or organ. Its functions relate to the complex environment of the man and have to hold capacities commensurately complex with it, for him successfully to continue himself living.

Afferent nerve lines from the sense organs, of seeing, hearing, smelling, tasting, and sensory lines from structures everywhere bring continually information into the posterior tracts of the brain, and efferent lines carry emissions continually to the voluntary muscles from its anterior tracts, executing its mandates.

The structural complexity and the functional capacity of the psychic center are as much matters also of transition in the person's lines of hereditary descent as those of any other organ, and correspond with previous ancestral acquisitions.

The functions of the psychic center, all relating to the outside of the man, make its capacities and abilities matters of outside observation by others. They are open to outside inspection and comment. It takes an expert to give an opinion of the integrity and functional ability of an internal organ, like the stomach, the lungs, the heart or the kidneys, but the abilities of the psychic center are open to the outside observation of all, and all are more or less efficient judges of its condition and capacity. Because this field is so generally occupied by others may be one reason why the medical profession as a rule so abstain from it, but it belongs to the province of medicine. This is being more and more recognized.

We recognize there are differences of abilities in all particulars in the psychic centers of different persons, and in the psychic center of the same person at different periods in his life. The fact that there are differences makes it necessary that we observe and judge them. We expect natural differences in persons, and so far as they are usual, customary, expected, we consider them to be the differences of normal brains—we consider them natural. When, however, the emissions that come from a person's brain, that, taken together, constitute his conduct, behavior, deportment and character, and intellectually determine his degree of psychic ability, are unnatural, unusual, not expected, and not customary, we at once recognize that his psychic-center acts abnormally from some reason.

The complex structures of the psychic-center of a man with their accompanying complex capacities for psychic action have all been acquired by exercise, carried to the degree of effort, made in his ancestral generations and in his own life. Exercise and effort, practiced in the performance of high-grade, efficient, profitable thought, alone give excellence to mental abilities, and the natural differences we observe are the results of differences in previous practices, ancestral and personal. Proper effort alone begets efficiency, and improper practice, or no practice begets inefficiency. There is no stand-still level or grade of psychic ability; it either improves, maintains the same level, or declines. Improvement above a previous level is hard to attain, while deterioration is easy. It comes readily from no effort.

Natural, normal, healthy brain structures are assential for normal, natural, psychis action —towards maintenance of ability and towards improvement. Brain health partakes of the general health. A general condition of good health is necessary, therefore, for brain strength and improvement.

With this understanding of the psychic-center, we can give much more practical definitions to some of our technical terms. Psychology, for instance, means the study of the normal structures and functions of the psychic-center. Psycho-pathy means the study of its abnormal structures and functions. Psychiatry is the treatment of its abnormalities of structure and function. Psychasthenia, or cerebrasthenia, means weakness of structure and function of the psychic-center. This center being a part of the whole nervous system, psychasthenia is included in neurasthenia.

Ability to feel, "sensation," being a property or function of all the sensory nerve lines that lead to the brain and of its posterior sensory tracts, normal abilities to feel are very essential to the comfort and happiness of the individual. Neurasthenia and psychasthenia, meaning weakness of nerve structures, particularly in the sensory nerve lines and in the sensating tracts of the psychic-center, are principally exhibited by over-sensitiveness, hyperaesthesia, of these structures. So, over-sensitiveness is the principal symptom of a neurasthenic, psychasthenic person. On account of it, he feels bad when he ought not. This is a very prevalent malady, growing more prevalent; it brings patients to the physicians more often than anything else. Every kind of a discomfort belongs to the psychasthenic neurasthenic. His or her complaints are manifold. A rich neurasthenic is a very profitable patient to her doctor, provided he can keep her as a patient. She is, however, continually running off after every form of quackery and fills the pockets of the irregular practitioners. They grow rich off such patients. With this numerous class growing more numerous, quacks, by their unscrupulous assertions and assurances, excel the competent, honest physicians in obtaining practice and profit. Honest psycho-therapy distinguishes the excellent physician.

Neurasthenia generally underlies and brings to the front any more grave psychic abnormality to which there is an inherent tendency or predisposition in a person. Increasing neurasthenia is a frequent predisposing cause of the extreme psychic defectiveness called insanity.

The psychic center is the specialty of the human race. We select and breed the hen for eggs, the cow for milk, the hog for flesh, the horse for speed, etc., etc. Nothing, however, is done by intelligent selection to improve the human specialty. Towards human eugenics practically nothing is done; it runs at ioose ends without even any instruction attending it. Nothing is done socially towards improving hereditarily the psychic-center. Practically, human reproduction is done without any reference to future generations or the improvement of the psychic-center, man's great comparative specialty. Not only ought brain hygiene to be taught to the individual, but the principles of hereditary psychic improvement, which correspond with the general principles of sterpiculture in all species, ought to be taught to all.

Most of the agencies in civilized society tend to psychic deterioration and degeneracy. The first object of civilization, as it goes nowadays, is to continue all human lives alike; an equally high valuation is placed upon all. They being naturally the most numerous, our benevolence and charity is principally directed towards the saving and the increasing of the less competent, often of the deficients and defectives. We not only give equal opportunities to all to succeed in living in accordance with their several psychic abilities, but we also aid the least capable to continue and multiply. Improved sanitation, improved medicine and surgery, improved laws and goverment, improved altruistic principles, improved abundance of the necessaries of life,

all work for the more numerous multiplication of the less competent, who in the ruder stages of our race's history dropped out.

For these reasons abnormalities of the psychic-center, of all grades, are appearing in greater numbers in civilized countries. We more abundantly save and multiply them than we did a few generations ago. Statistics about insanity, which is only the extreme grade of forms of psychic deficiency and defectiveness, are easy to obtain. They indicate in all civilized countries that insanity is increasing more rapidly than the populations. Other milder types of psychic abnormalities are even more increasingly apparent also.

The first predisposing cause for these abnormal psychic conditions in civilized society comes with the civilized and the uncivilized alike. In all human societies deficiencies and defectivenesses of all structures, the psychic-center along with the others, occur more frequently in those phyla, or lines-of-descent, that are deteriorating in general health. Diseases, injuries, faultiness and weakness in all organs happen most frequently in degenerating families and races. We find, therefore, psychic abnormalities of all grades appear most frequently in deteriorating lines-of-descent, those less generally healthy than the preceding.

The second predisposing cause occurs in civilized society most, as I have already stated, because in civilized communities more than the uncivilized, all their social improvements and methods tend to bring to adult life and to multiply the less competent. They naturally are the more numerous class, and if we save all alike we multiply them most.

A third predisposing cause for the increase of psychic abnormalities in civilized countries is the almost universal use of anodyne drugs, which act chemically upon the delicate protoplasmic material that constitutes the central, functionating part of the sentient and conscious fibers and cells of the psychic department. There are a number of such drugs, all of which act chemically to obtund or stop the sensating action of these structures. Some of these narcotic drugs are chloroform, ether, nitrous oxide, chloral, alcohol, the solutions and alkaloids of opium, of coca leaves, of hashish, of hyosciamus, of tobacco, of cola nuts, tea and coffee. Small doses of any of these produce a pleasurable effect; for this reason the milder ones have gotten into general popular use as luxuries. They all, however, have injurious chemic effect upon the structures of the psychic-center, and in the length of time, through generations, are producing a generally impaired, psychasthenic condition of the brains of the people. Their so broadcast use is having a general effect in civilized countries, where so many of them are used as luxuries. The women and children use caffein, the men use caffein, nicotine and alcohol generally throughout society.

The three predisposing causes, therefore, in civilized society, for the general increase of psychic deficiency and defectiveness are, first, lineal deterioration of general health; second, the saving and multiplying of the less competent; and, third, the general use of narcotics as luxuries.

This paper is meant as an appeal for more social attention to the personal conservation and the hereditary improvement of the psychic-center—man's greatest specialty.

THE VALUE OF THE CLINICAL LABORATORY IN DIAGNOSIS.*

By E. S. SLEDGE, B.S., M.D.,
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The time of Hippocrates and the old Greek school is as far back as we can go in the authentic history of medicine. Even here we find the rudiments of the clinical laboratory. The Greek physicians of this age carefully scrutinized all the excreta from the human body; their observations were based alone upon the sense of sight. Later more information was gathered by bringing into use the senses of smell and taste, by means of which latter glycosuria was demonstrated as a symptom of diabetes mellitus. But in this department, as in all branches of truly scientific medicine, little advance was made until the last century; empiricism and dogmatism held full sway and little of value was added to the methods handed down from the Greek school. The great intellectual upheaval caused by the French Revolution gave an impetus to original thought and experimentation with which to begin a new era in medicine. The nineteenth century saw the development of modern physiological chemistry and the microscope. Minute pathology and bacteriology were made realities. The names of Jenner, Muller, Lister, Virchow, Laennec, Koch, Eberth, Pasteur, Wright, Wassermann, and Ehrlich stand out most prominently among the long list of able men who have given us the most valuable contributions to the clinical laboratory. It is due to the activity of such men that this department of medicine has outstripped all the others in advancement during the past fifty years. Yet the work is far from complete and I believe herein lies the greatest field for modern investigation.

To gain a more perfect and fair understanding of the advantages and disadvantages of the information yielded by the clinical laboratory it is best to take up in some detail the enumeration of the routine work done in a modern and well-equipped laboratory. A thorough conception of this method of obtaining diagnostic and prognostic evidence depends on an accurate knowledge of the procedures followed out and to what extent we should depend on the results produced. According to the view a physician takes of this line of work, it may be of infinite benefit to him or be a constant source of error in diagnosis to him and a menace to his patient.

The first matter for consideration is urinalysis. The urine is to be considered first of all because it is the most important and is most easily examined. Too much stress cannot be laid upon the actual necessity for a routine and careful analysis of urine. With a knowledge of modern medicine this can be done by any practicing physician, and requires very little apparatus. Moreover, it yields points that no doctor can afford to disregard unless at a sacrifice to his patient. An item, outside the scope of the clinical laboratory, but of exceeding importance and deserving of mention here, is the amount of urine excreted for the twenty-four hours. The kidneys are the most powerful force in elimination; hence, this dictum should be well noted in the handling of every serious case and its significance carefully weighed.

The examination of urine for diagnostic purposes is so very essential to the family doctor as well as to the internist that I feel justified in particular emphasis. Thus we are immediately able to identify diabetes mellitus and nephritis even in the incipient stages. And in the case of nephritis we are enabled to differentiate the type and in many instances to attach the primary lesion as one of the heart, or as one of the kidneys themselves. The

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Cammidge reaction, though still in the experimental stage, and of difficult technique, gives hope of being of great value in cholepancreatic affections. Ehrlich's diazo reaction in conjunction with a Widal blood test is of significance in enteric fever. Estimation of the amount of indican in the urine reveals the degree of putrefaction in the upper intestinal tract. Excess of bile pigments turns attention to an aberration of function in the bile passages. The levulose test speaks for the glycogenic function of the liver. Periodic examination for albuminuria is strongly indicated in the case of every pregnant woman; in this way we are forewarned of approaching eclampsia or kidney-breakdown. The uric acid and urea content of the urine often throws light on chronic rheumatic or rheumatoid diseases, and thus treamtnet is suggested. The presence of blood and pus with the type of epithelium found is of great aid in infections of the genito-urinary tract. Crystals have a bearing on urinary calculi and their morphology. In infections of the genito-urinary tract cultures are used to isolate the organisms offending, and possibly for the preparation of autogenous vaccines; in this manner also we often succeed in definitely determining a typhoid carrier and thus are better prepared to further our municipal sanitary measures.

Urinalysis also frequently denotes the prognosis offered. We are thus kept informed of the efficacy of treatment in a case of diabetes. The extent of the damage to the kidneys in nephritis tells us to what degree we may hope for regeneration. In febrile disease where the patient's chances of salvation largely rest with the kidneys, we obtain valuable information as to the progress of the case. Therefore, in many conditions we must resort to repeated examinations of the urine at regular intervals and as frequently as is convenient.

Blood examination comes second to urinalysis only. Here also it is far better to make routine examinations whenever possible. The appearance of the patient, depended on by so many, is a most uncertain guide as to the condition of the blood, the surest indicator of body nutrition. An anemia remedied in many cases solves the problem of treatment. Estimation of the Hemoglobin, enumeration of the erythrocytes, and the color-index discover the existence of an anemia and defines the class to which it belongs.

In the total leucocyte count we gain most valuable data in certain diseases. Typhoid fever shows a distinct leucopaenia; a rise in the count hints of chole-cystitis or impending intestinal perforation. Crupous pneumonia should yield a marked leucocytosis; a low count or a fall in the count without clinical improvement is always to be regarded a grave omen. In the leukemias we must rely on the leucocyte count, total and differential, for a definite diagnosis of the disease and the type. To the surgeon a leucocyte count is a great aid in the pyogenic infections, and is a factor in the indication to operation. The differential count is even more to be depended on than is the total count. In reference to this, Simon, of the Baltimore College of Physicians and Surgeons, speaks with great emphasis. He says: "No blood examination is accordingly complete in which the differential count has been neglected, and I would emphasize again and again that if only one count is for any reason to be made, it should invariably be the differential. It is a great surprise to me to see how little the importance of this dictum is as yet appreciated, and I would insist that the physician who nowadays does not resort to the differential count in every case that is clinically not absolutely clear wilfully deprives himself of a diagnostic aid of the most important kind. There are few pathological conditions upon which it does not throw important light." He puts the matter strongly, but the subject is a most worthy one. In this way we determine the septic factor—an increase in the neutrophiles with a decrease or absence of the eosinophiles. A normal or increased percentage of eosinophiles means a successful war

on the infection or the occurrence of a complication. A disproportionate increase in the eosinophiles leads one to look for helminthiasis —notably uncinariasis, trichinosis, or infection with the dibothriocephalus latus. An increase in the lymphocytes is suggestive of lymphatic leukemia, tuberculosis, pertussis, influenza, or typhoid fever.

Smears stained with one or other of the modifications of the Romanowsky double stain serve for the differential count, while they may yield other valuable findings. Thus we discover malarial parasites in diagnosing the infection or proving our suspicions of a carrier of malaria; for the latter purpose in the very light infections and in those after the administration of quinine, the Ross thick-smear method is of great value, but only to one closely familiar with the hematozoon. Other more common parasites found in the blood-smear are the filaria sanguinis hominis, the spirochaeta of Obermeier in replapsing fever, and others still more rare in this part of the world. The condition of the red cells can thus be studied; anisocytosis, poikilocytosis, polychromatophilia, and nucleated red cells are important in the anemias. Basic granulation of the erythrocytes is significant in a case of suspected plumbism.

Blood cultures enable us to make an early and positive diagnosis of enteric fever. The typhoid bacilli can be recovered from the blood in a large percentage of cases as early as twenty-four hours after the onset of the illness. This is the most valuable aid in diagnosis during the first week, before the appearance of the Widal reaction. After the first week the percentage of successful blood-cultures takes a decided drop. But this method of examination is now even more of a necessity since the adoption of the use of typhobacterin in the prophylaxis of typhoid fever. A positive Widal results very quickly after the vaccination and persists for a varying period, making the agglutination reaction worthless in many cases. Blood-culture is also of aid in many other acute bacterial diseases, as pneumonia, and septic infections where the seat of infection and the type is not clear.

Other serum reactions are deserving of passing mention The Wassermann reaction in lues and the Noguchi modification have revolutionized diagnosis of this disease, and offer an efficient means of checking up therapeutic results. Agglutination tests are of service in colon bacillus infections, cholera, etc.

By the use of dry or wet test-meals we gather information in gastric disturbances that is obtainable in no other way. It is thus we learn the condition and amount of the gastric secretion, throwing great light on the question of gastritis, peptic ulcer, malignancy, and anatomic derangements of the stomach. In this variety of affections symptomatology is probably more uncertain than in any other list of pathologic manifestations. Therefore, gastric analysis is of exceptional value to the stomach specialist, the internist, the surgeon, and the general practitioner.

Examination of sputum of course is of more limited application. But it should be resorted to in every case with chronic productive cough. This is advisable from the standpoint of the patient and as a measure to protect the public. In many instances this is the only means of differentiating pulmonary tuberculosis, chronic purulent bronchitis, and abscess of the lung. A correct diagnosis in such a case has a vital bearing on the patient's future life and habits. Eosinophiles, Curschmann spirals, bronchial casts, and bacteria in the sputum are more or less characteristic of certain diseases of the respiratory tract, and may be the basis for an otherwise uncertain diagnosis. Even amoebae have been found in the sputum, resulting from an amoebic abscess of the liver working up through the diaphragm and rupturing into the lung. The presence of many diplococci in an acute pulmonary infection is invariably associated with pneumonia, and with experience the pneumococci can be recognized without cultures. The bacillus of

tuberculosis is found by the old smear-method or the use of the more modern antiformin technique.

During the past few years a great deal of attention has been paid to examination of the feces other than for parasites and their ova. Much can be learned of the efficiency of the digestive apparatus by gross inspection of the stools, the odor also being noted. Form, consistency, color, and the presence of particles are always to be considered. Edsall, in his teaching, has laid particular stress on this procedure, and claims that in this way the underlying cause of many obscure intoxications can be ascertained. The presence of gross or occult blood has a distinct bearing on the diagnosis of many gastro-intestinal diseases. Tests for biliary pigments show partial or complete occlusion of the bile ducts. Tapeworms and roundworms are found by gross inspection or their ova by the use of the microscope. Uncinariasis and amoebic dysentery are by no means uncommon in this latitude, and we must depend on the feces for our positive diagnosis. In a routine blood examination a high eosinophile count should in every case lead to a careful search for ova in the stools. The most advanced work being done on the feces is cultures for determining carriers of typhoid fever and cholera, thus attempting to eradicate a lurking danger to the health of the public.

Exudates and transudates should be subjected to analysis in every possible case. In most instances this is the only means at the disposal of the practitioner of isolating the nature of the fundamental lesion. A truly scientific doctor always desires to know what pathological process is at hand to account for the clinical phenomena present. Such a knowledge is by no means merely one of interest, and often is used to outline a plan of therapeutics. Differentiation between tuberculosis, syphilis, and malignancy is of vital prognostic and therapeutic import.

Pus from any source had best be examined in smear form though no cultural procedures be resorted to. In successfully combating an infection we must know the type of organism offending. This is especially true for gonorokending. This is especially true for actinomycosis, gonorrhea, and diphtheria. We go further with the two latter diseases and use the microscope to determine the extinction of the infection; and this is the only way in which we can be sure of a successful termination to treatment.

One of our modern therapeutic agents with which results are obtained nothing short of brilliant is absolutely dependent on the clinical laboratory. This is vaccine-therapy. The manufacturing chemists were quick to take cognizance of these facts, and the market is now crowded with their preparations. These are of value to be sure, but are as nothing compared to the freshly prepared autogenous vaccine, even though the polyvalent stock bacterin be employed. This field is still in its infancy, despite the wonderful strides already made. It is rapidly being extended to all diseases of bacterial origin. Its efficacy is attested by results, and the fact that it is based on a definitely proven biological principle. The ravages of carbuncle and furuncle are quickly halted by the use of autogenous vaccines in conjunction with simple surgical measures, opsonins and antibodies being generated in the host. It is a method of treatment applicable to every patient in which it is indicated, when we stop to think that there is a clinical laboratory in nearly every city of any size.

Pathological examination of tissues is always to be desired when available. It is an invaluable indication as to the necessity for further surgical intervention. In many instances this has also proved of great medico-legal significance, protecting the surgeon and even the internist from false claims for damages.

At the risk of appearing pedantic I have gone into some considerable detail in presenting the work done in the clinical laboratory, and how this may serve as a valuable aid in

diagnosis. Yet I have not attempted to entirely cover the field, only alluding to the more essential features. Every physician should be familiar with this side of medicine, and should find no difficulty in being so, considering the voluminous literature on this subject. But with all the help we may derive from the clinical laboratory it is not unattended with a certain amount of danger. Still the latter can, with proper care, be made an almost neglible quantity.

The prime requisite in laboratory findings is that they come from a reliable and authentic sorce. The more technical work should always be done by one of considerable experience; in this way only can consistent results be produced. This of course does not mean that the mere routine work should be sent to a specially equipped laboratory; it can and should be done by every physician or his assistants. But wherever or by whom the examinations be done the chances of error must be minimized to the fullest extent. Findings that are for any reason uncertain are worse than useless; they are positively dangerous; therefore, a physician should be sure of the authenticity of these findings before accepting them. Many a mistake in diagnosis has been made through carelessness or ignorance in laboratory methods. Too much emphasis cannot be laid on this point.

When the accuracy of the work done is assured there comes the question of interpretation. This is an essential step in using clinical laboratory findings to advantage. It is just as important as is the technique of the examinations themselves, and requires just as much study and experience. For this reason when the material is sent to the labortory a fairly complete history of the case had best be forwarded, and the opinion of the laboratory man be requested in all obscure cases. This is especially true where the physician does not feel sure of his ability to logically apply the results to the individual patient.

Moreover, clinical laboratory reports ought never to be taken verbatim to the exclusion of the other clinical aspects of the case. Such results are only symptoms, though important ones, and should always be thus looked upon and classed with the subjective and objective symptoms. Very few of these findings can be held pathognomonic in themselves; negative reports can even more rarely be so considered. Enthusiasm here as elsewhere is no excuse for blindness. Some men depend absolutely on the pathologist and thus are frequently led into error; and this attitude cannot be too strongly condemned. No man ought to make his diagnosis alone on the majority of pathological reports any more than he would rely alone upon the tongue for his diagnosis of typhoid fever or a cough for that of pulmonary tuberculosis. This tendency among so many of the younger men especially was the basis of a noted surgeon's originating the term "leucocyte doctor in surgery."

To summarize, let me offer the following conclusions.

1. Laboratory methods are invaluable in diagnosis, are a great aid in prognosis and in the intelligent observation of the course of disease.

2. The source and interpretation of the results are of extreme importance.

3. Results are to be considered only as symptoms with the other clinical manifestations of the case.

4. Every physician should do as much laboratory work as is compatible with his time and equipment. For the more advanced work many laboratories are at the disposal of the physician at a system of moderate fees, and provision is made for transportation of specimens.

5. Every physician should strive to avoid laxness in the employment of laboratory information when occupied by a busy practice, and avoid the human tendency to take chances.

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DISCUSSION.

Dr. W. W. Harper, Selma, Ala.—The differential count is very important in many of these cases of fever. The doctor's paper is such an excellent one and covers so much ground that it will be impossible to discuss it in its entirety. The differential count is something that nearly every doctor can learn to do, and once he has done it he would not be without it. Cabot states that in cases of appendicitis a low leucocyte count, with the polymorphonuclears above ninety per cent, means that we are dealing with an absolutely fatal case of that disease; that it is useless to operate on such a patient; that the patient will surely die. Therefore, the differential count in such a case would simply save the patient the seriousness of an operation, the expense of an operation, and the doctor much mortification of having operated and losing his patient. On the other hand, a low leucocyte count, with a small percentage of polynuclears, means that the patient has a mild infection, and that there is no necessity of subjecting the patient to immediate operation, but one can wait until the interval and operate with a great deal more safety.

Furthermore, in cases of beginning whooping cough we know that the time of infection is in the early stages; in other words, when the patient is in the catarrhal stage. That is the time when the patient is going around infecting other children by contact, and we are uncertain whether it is a case of whooping cough or an ordinary case of coryza; but if we make a blood count we can determine whether the patient has whooping cough or simply an ordinary case of coryza. If it is whooping cough you will find a large increase in the lymphocytes. This does not take place in an ordinary cold.

I want to relate a case which may interest you. I was called to see a child with this history: On Sunday the child was hard of hearing. The past history was negative. The family history was negative. On Monday night the child had an earache. On Tuesday it had fever, but no further earache. On Wednesday it was clear of fever, but on Thursday it had fever again. On Friday morning I saw the child and found it was living in a malarial district. Physical examination showed absolutely nothing in the lungs; the child was not complaining of its ears, but it had a temperature. Ordinarily speaking, a practitioner might have given the child quinine because it was living in a malarial district. I did not give the child quinine but made a blood examination. I found a high leucocyte count with ninety per cent polynuclears. The diagnosis lay between a suppurative otitis media or a central pneumonia. I had a specialist examine the ears of the child, and he found no trouble with the ears. I diagnosed a central pneumonia without the physical signs. Three days later the child showed the physical signs of lung consolidation, the day following convalesced.

INDICATIONS FOR ABDOMINAL CESAREAN SECTION IN ECLAMPSIA.*

By JOHN F. MORAN, M.D.,
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Eclampsia is the *bete noir* of obstetrics. Its unknown cause and origin have given rise to endless speculation and great diversity of opinion regarding the treatment. While the source and nature of the disease are still unsolved, our knowledge of its pathology, supporting the toxin theory, has, in recent years, been greatly augmented, and the writer believes that its demonstrated progressive nature clearly emphasizes the necessity of prompt emptying of the uterus, particularly after the onset of the convulsions. It is impossible to tell in a given case the amount of damage, but there is no question that repeated seizure is a compelling indication for immediate action. What the method of intervention shall be must be determined primarily by the condition of the cervix and the anatomical and physiological changes which the uterus undergoes during pregnancy and labor. In the primipara the cervical canal is closed throughout pregnancy, while in the multipara the internal os may be closed, the external is patulous. In the later months of gestation, in the primipara, owing to the increasing intrauterine tension on account of the intermittent contractions of the uterus and the resistance of the cervical barrier, the passive lower segment is formed and at, or just prior to, labor the forces are also exerted upon the internal os, which gradually unfolds until complete dilation is effected. In the multipara, however, because of the relaxed condition of the uterus, the intrauterine pressure is not so great, so that there is little effacement of the internal os during labor, and in dilating, the

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cervical canal assumes rather a tubular form, unlike that of the primipara, which is conical. Therefore, in primipara with the cervix intact, os undilated and the life of the mother or child menaced, vaginal or abdominal Cesarean section, depending upon the period of gestation, are rational methods of delivery. The writer is well aware that this view is not shared by those who oppose elective intervention in eclampsia, but experience and study has thoroughly convinced him that these operations are not only justifiable, but in some instances imperative. Those who have to deal with eclampsia know that manual and instrumental dilation of the cervix are attended with grave, immediate and remote dangers. Forcible dilation, or, more correctly speaking, *divulsion* of the cervix, aggravates the eclamptic seizures, causes shock, deep cervical tears are not infrequent, and hemorrhage and infection often complicate the situation. These remarks apply particularly to primipara with intact cervices and to multipara with like condition, who have never been delivered by the vagina, and in cases of unyielding rigidity of the cervix due to scar tissue, and also where immediate delivery is indicated in the interest of the mother or child. Of course the writer does not wish to be understood as advocating the classical and vaginal Cesarean sections to the exclusion of the other methods of intervention in eclampsia, as he recognizes that the cutting operations have a well defined but limited field of application. In accordance with this view, the writer desires to report the following cases:

Case 1.—M., 1, primipara, age 24. Eight months gestation. Seen in consultation with Drs. Gill and Stone. Admitted to Sibley Hospital, June 6, 1911, 11 a.m. Had two convulsions before being removed to the hospital. Examination by Drs. Stone and Gill. Deep coma, stertorous breathing, pulse 132. Cervix intact, os undilated. Fetal heart distinctly heard over the left lower quadrant of the abdomen. At 12:45 p.m. examined by Drs. Stone and Moran. Labor in abeyance, fetal heart weak and coma more profound than on previous examination. Cervix intact. Cesarean section was elected with the hope of saving the mother and child. Operation performed by Dr. Stone, assisted by Drs. Gill and Moran. Placenta was attached to anterior wall of the uterus. Baby delivered; cyanosed and toxic, and twenty minutes elapsed before the breathing became regular. A few minutes after delivery the infant had a convulsion and seizures recurred at intervals for twenty-four hours. Weight five pounds. Was placed in an improvised incubator and had to be fed artificially. Thrived very well the first four weeks, during which time it was cared for in the hospital. Died two weeks after removal, of marasmus.

Case 2.—Three succesful Cesarean sections for eclampsia in three successive pregnancies of the same patient, performed by Dr. W. P. Carr. The writer saw this unique case in consultation with Dr. G. Lloyd Magruder at the beginning of the ninth month of pregnancy in the last pregnancy. At that time there was a trace of albumen in the urine but no other clinical manifestations of impending eclampsia were present, so it was decided to let the pregnancy continue.

Mrs. D., primipara, married, white. First operation October 25, 1907. Dr. Carr was summoned to Sibley Hospital in great hurry by Drs. Barker and Suddarth. The patient was unconscious and having repeated convulsions. Cervix undilated. Labor had only begun about an hour before. Woman was too fat for vaginal work of any kind. Abdominal section elected. Not a single convulsion after the operation. Patient made a good recovery and left the hospital on the fourteenth day. Child living.

Became pregnant about one month after leaving the hospital and aborted accidentally about the fourth month.

Second operation, March 11, 1909. Practically same condition as at the first opera-

tion. Convulsions began with the first pain. Ceased promptly after operation. Easy recovery. Child large, healthy and still living.

Third operation, November 8, 1910. Patient had been treated by Dr. Magruder for several months with view of preventing eclampsia. With the advent of labor, convulsive seizures began. At the operation adhesions found between omentum and abdominal wall all along line of incision. Good recovery. Child living.

When Halbertsma, in 1890, at the International Medical Congress at Berlin, advocated Cesarean section as the universal remedy for eclampsia, without regard to medical treatment, the announcement created a sensation. His experience was based only upon three cases, the first performed in 1878 with a fatal result, was surely not calculated to inspire one with enthusiasm for the operation. Ten years later, with improved technic, Cesarean in general was attended with better prognosis, and he performed the operation in his second and third cases with the happy result of saving both mothers and infants.

In 1897, Kellitz (Inaugural Dissertation, Halle) collected twenty-eight cases of Cesarean section for eclampsia. Fourteen mothers died (50 per cent) and eighteen infants were stillborn or succumbed shortly after birth (62 per cent). In nine cases there were other indications for the operation (contracted pelvis, myoma, etc.). If these be excepted, the mortality is more favorable (47.3 per cent.).

Streckeisen (Arch. f. Gyn., Berlin, 1903, 48, 678-729) collected twenty-eight cases. Twenty-six were operated on from 1897 to 1901. Two were operated on by Schatz (1888-1892) and were not reported by Kellitz. Twenty-six of the cases were living and two were dead at the time of the operation. Twelve of the mothers died (42.8 per cent). Nine infants were dead or died shortly after birth (30 per cent).

Hillman (Monatschr. F. Geburtch, U. Gynak., Berlin, 1899, x, 193,207) reviewed thirty-nine cases and reported one operated on by himself. All but seven are given either in Kellitz' or Streckeisen's series. Of the seven cases, five mothers died (71 per cent); three infants were born alive, one was stillborn and two are not mentioned.

The writer has collected fifty-three cases of Cesarean section for eclampsia from 1907 up to the present time. Seventeen mothers died (32.32 per cent). Forty-five infants were born alive, seven were stillborn, and in four cases the result is not mentioned.

Altogether 116 cases have been recorded in the literature with a maternal mortality of 48.93 per cent, and of infants 39 per cent respectively, or more than double the general maternal death rate of eclampsia. At first glance this is not a convincing argument in favor of Cesarean section in eclampsia, but the final analysis shows that a very large percentage of the patients had been previously subjected to other methods of treatment, many of whom were practically moribund before the operation was resorted to. Yet if we compare the above series we find that the results during the last decade are very encouraging, and that the death rate for the mothers has been reduced to 32.32 per cent and 19.90 per cent for the infants. This steady improvement in the statistics has been due, in a great measure, to better technic, greater care in the selection of the cases and prompt intervention. Certainly with the knowledge gained and wider experience it is reasonable to expect that the mortality will, in appropriate cases, be still further reduced by elective Cecarean section.

This paper is, therefore, offered in advocacy of vaginal and abdominal Cesarean section, in certain cases of eclampsia, as valuable and rational operations. If they are to have an established place in the treatment of eclampsia the indications for which they are urged must be met by prompt elective action, for to delay until the patient is in *extremis* and all other treatment has failed, is to invite disaster.

No. 1—Lowenstein, H. Centralbl. f. Gynakologie, Leipzig, 1902, 26, 117-120.

Case 1—(1899-99) X. Age, 28. Primipara. Not in labor. Cervix intact, os undilated. Term. Frequent convulsions. Casarean section. No previous treatment. Mother died seventh day after operation. Child lived.

Case 2—(1901) X. Age —. Primipara. Not in labor. Cervix intact, os admits finger. Beginning of the ninth month. Frequent convulsions. Cesarean section. Morphia and chloroform, previous treatment. Convulsions continued after operation. Mother died of odema of the lungs. Child lived.

Case 3—(1901) X. Age —. Primipara Seventh month of gestation. Cervix intact. Frequent convulsions. Cesarean section. Previous treatment, morphia and hot air baths. Did not react after operation and died in coma. Child still born.

No. 2—Van Guerard. Centralbl. f. Gynåkologie, Leipzig, 1902, 26, 1326-29.

Case X. Age, 25 years. Primipara. Convlusions and coma. Eighth month of gestation. Cervix intact, os closed. Cesarean section. Previous treatment, morphia, salt solution, hot air baths, etc. Mother died in coma. Child stillborn.

No. 3—Skeel. American Gynecology, Baltimore, Md., 1903, 3, 502-510.

Case, X. Age, 19. Primipara. Seventh month of gestation. Convulsions. Cesarean section. Previous treatment, morphia, chloroform, veratrum viride, venesection, etc. Mother living. Child dead.

Case 6—Croom, Sir H. Trans. Edinb. Obstet. Soc., 1903-04, 29, 194-209.

Case X. Convulsions. Cervix intact. Cesarean section. Previous treatment, hot baths, chloroform, instrumental dilitation, etc. Mother died. Condition of infant not stated.

Case 7—Eclampsia. Mother died third day after Cesarean section of septic pneumonia. Child lived.

No. 8—Wanner. Centralbl. f. Gynakologie, Leipzig, 1904, 28, 13339-41.

Case 8—X. Age, 27 years. Primipara. Eight and one-half months gestation. Convulsions. Previous treatment, morphia. Cesarean section. died of oedema of the lungs twenty-four hours after operation. Child lived.

No. 9—Boldt. Post Graduate, N. Y., 1905, 20, 1251, 1267.

Case 9—E. H. Age, 12 years. Primipara. Convulsions and contracted pelvis. Cesarean section. Convulsions after operation. Mother died of oedema of the lungs. Child lived.

No. 10—Woodbury, N. Y. Medical Journal, 1905, 87, 999-1001.

Case 10—X. Age, 25. Primipara. Twenty-five convulsions before operation. Previous treatment, manual dilitation, chloroform, high forceps, etc. Mother died of infection on the eighth day after operation. Condition of child not given.

No. 11—Klots, P. S. Transvaal M. J., Johannesburg, 1906-7, 2, 160-163.

Case 11—X. Age, 19. Primipara. Convulsions. Cervix intact, os closed. Morphia ineffectual. Cesarean intact. Had several convulsions after operation. Mother recovered. Child lived.

No. 12—Lundblad. Hygiea, Stockholm, 1907, 2f, 7, 714-722.

Case 12—X. Age, 40 years. Primipara. Convulsions. Cervix intact. Cesarean section. Mother recovered. Child (?).

Case 13—X. Age, 26 years. Primipara. Child died.

Case 14—X. Age, 22 years. Primipara. Child premature. Cesarean section. Mother recovered. Child recovered.

No. 15—Rotter. Pest. Med. Chir. Presse, Budapest, 1907, 51, 194-195.

Case 15—X. Age, 26 years. Primipara. Frequent convulsions and deep coma. Oedema of face and extremities. Cesarean section. Had several convulsions after operation, necessitating the administration of morphia and salt solution. Mother recovered. Child lived.

No. 16—Pfannenstiel, Munch. Med. Wehr., 1908, 552, 1903.

Case 16—X. Cesarean section performed in a case of eclampsia because frequent convulsions, oedema of the lungs and the failure of the general measures. Mother recovered. Child lived.

No. 17—Tompkins. Old Dominion J. of M. and S., Richmond, 1908, 7, 25-27.

Case 17—X. Age, 43 years. Primipara. Seven months gestation. Repeated convulsions. Cervix long, hard and os closed. Cesarean section. One convulsion after operation. Mother recovered. Child living.

No. 18—Markoe. Bull. Lying Hospital, N. Y., 1908, 2, 5.

Case 18—X. Age, 24 years. Primipara. Had three convulsions before operation. Previous treatment, chloroform. Convulsions after Cesarean section. Mother died. Child lived.

No. 20—Johnson, S. H. Northwest Medicine, Seattle, 1908, 6, 149-151.

Case 20—X. Age, 19 years. Primipara. Eight months gestation. Convulsions. Coma. Cervix closed. Cesarean section. Mother recovered. Child lived.

No. 21—Smith, W. J. Am. Med. Ass., 1906, 46, 1355.

Case 21—X. Age, 21 years. Multipara. Typhoid fever complicated the first pregnancy and aborted at the fifth month. Second pregnancy, forceps delivery. Child mutilated. Third pregnancy complicated by eclampsia. Cesarean section. Mother recovered. Child lived two and one-half hours and died of convulsions.

No. 22—Mullally. Trans. South. Surg. and Gyn. Ass., 1909, Phila., 1910.

Case 22—X. Six months gestation. Cervix intact. Convulsions before and after operation. Previous attempt to dilate the cervix. Mother died. Child stillborn.

Case 23—X. Convulsions before and after delivery. Cesarean section the only treatment. Mother recovered. Child stillborn.

No. 24—Risseeuw, A. J. Nederlandsch. Tijdschrift voor Geneeskunde, 1910, Heft no 14.

Case 24—X. Primpara. Cervix intact. Convulsions. Cesarean section. Mother recovered. Child died two hours after birth.

Case 25—X. Primipara. Cervix intact. Convulsions. Cesarean section. Mother recovered. Child died.

Case 26—X. Primipara. Cervix intact. Convulsions. Cesarean section. Mother recovered. Child recovered.

Case 27—X. Primipara. Cervix intact. Convulsions. Cesarean section. Mother recovered. Child(?).

Elective operation was performed in the above four cases.

No. 28—Schell. Jour. Indiana State Med. Ass., 1910, 3, 16-20.

Case 28—X. Primipara. Seven months gestation. Convulsions. Labor not begun. Manual dilitation failed. Cesarean section. Mother recovered. Child living.

No. 29—McCann. Lancet, London, 1910, 2, 789-792.

Case 29—X. Age, 26 years. Cervix elongated and rigid. Morphia and chloroform administered. Unsuccessful attempt made to dilate the cervix instrumentally and manually. Recurring convulsions prompted Cesarean section. Mother recovered. Child stillborn.

No.—Burns. Colorado Medicine, 1911, 8, 183-4.

Case 30—Mrs. F. Age, 31. Primipara. Frequent convulsions. Bleeding from the cervix on attempted dilation. Cesarean section. Mother recovered. Condition of child not mentioned.

No. 31—Metzler. Med Weekbl., Amsterdam, 1911, 17, 565.

Case 31—X. Cervix intact. Frequent convulsions. Chloroform administered and attempt made to dilate the cervix without effect. Cesarean section performed. Mother recovered. Child lived.

No. 32—Davis. Surgery, Gynecology and Obstetrics, Chicago, 1911, 13, 406.

Case 32—X. Primipara. Not in labor. Eclampsia, 9½ months. Cesarean section. Mother recovered. Child lived.

Case 33—X. Primipara. Not in labor. Eclampsia. Full term. Justominor pelvis. Cesarean section. Mother lived. Child lived.

Case 34—X. Primipara. Eclampsia, 9½ months. Not in labor. Twins. Cesarean section. Mother died on table. Twins lived.

Case 35—X. Primipara. A. P. Eclampsia. Cesarean section. Mother recovered. Child lived.

Case 36—X. Primipara. Not in labor. Eclampsia, 8½ months. Mother died second day. Child died twenty-third day.

Case 37—X. Multipara. Not in labor. Rigid cervix. Eclampsia. Cesarean section. Mother lived. Child lived.

Case 38—X. Primipara. Eclampsia. No sign of fetal life. Twins. Cesarean section. Mother lived. Stillbirths.

Case 39—X. Primipara. Eclampsia, 7th month. Not in labor. Cesarean section. Mother recovered. Child lived.

Case 40—X. Primipara. Eclampsia 8th month. Not in labor. Cesarean section. Mother recovered. Child lived.

Case 41—X. Primipara. Eclampsia 8th month. Not in labor. Cesarean section. Mother recovered. Child lived.

Case 42—X. Primipara. Eclampsia 8th month. Not in labor. Cesarean section. Mother died first day. Suppression of urine and repeated convulsions. Child lived.

No. 43—Carr, W. P., Washington, D. C.

Case 43—Mrs. D. (first operation, Oct. 25, 1907). Primipara. Ninth month gestation. In labor. Intrapartal convulsions. Cervix intact. Cesarean section. No other treatment. Mother recovered. Child lived.

Cace 44—Mrs. D. (second operation, March 11, 1909). Multipara. Ninth month in labor. Intrapartial convulsions. Cervix intact. Cesarean section. No other treatment. Mother recovered. Child lived.

Case 45—Mrs. D. (third operation, Nov. 8, 1910). Multipara. Ninth month. In labor. Intra-partal convulsions. Cervix intact. Cesarean section. No other treatment. Mother recovered. Child lived.

No. 46—Stone, I. S., Washington, D. C.

Case 46—Mrs. L. Age, 34. Primipara. Eighth month. Not in labor. Frequent convulsions. Cervix intact. Cesarean section. No other treatment. Mother recovered. Child lived.

No. 47—Coen. Bolletina della Societa Toseana di Ostetricia et Ginecologia, 1902, n 5, 84.

No. 47—Coen. Bollentina della Societa Toseana et Ostetricia et Ginecologia, 1902, n 5, 84.

Case 47—X. Age, 30. Primipara. Recurring convulsions. Cesarean section. Fourth day evidence of infection. Anti-strepticoccus serum administered. Died on tenth day. Child lived.

No. 48—Essen-Moller. Hygiea, Stockholm, 1904, 2f, liv., 705-708.

Case 48—H. L. Age, 22 years. Primipara. Repeated convulsions and coma. Cesarean section. Mother died. Child(?).

No. 49—Sevryugoff, N. J. J. Akust, i jensk. boliez., St. Petersb., 1909, 23, 1007-1014.

Case 49—X. Age, 30 years. Primipara. Frequent convulsions. In labor. Full term. Previous treatment, morphia, chloroform and salt solution per rectum. Cesarean section performed at patient's home. Mother recovered. Child lived.

No. 50—Ibid.

Case 50—X. Para 6. Age, 34. Frequent convulsions. Cervix intact. Canal not dilated. Child's heart action weak. Cesarean section. Morphia and salt solution after the operation. Convalescence without incident. Child lived.

No. 51—Kramer, A. J. H. Nederl. Tydschr. u Gereesk., Amst., 1904, 2.v. 40, d, 2, 833-835.

Case 51—X. Repeated convulsions. Cervix intact. Morphia given. Cesarean section. Mother recovered. Child lived.

No. 52—Kemper, G. H., reporter. J. Indiana State Med. Ass., 1911, 4, 170, Dr. Budd Van Swerigen, operator.

Case 52—X. Age, 30. Eclampsia. Cesarean section. Mother died. Child lived five hours.

No. 53—Ibid. Schaefer, C. Richard, operator, p. 152, case 53.

Case 53—X. Age, 27. Primipara. Eight and one-half months gestation. General anasarca and almost complete anuria. Tachycardia and intermittent pulse. Cesarean section. Mother recovered. Child lived.

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SOME PERSONAL OBSERVATIONS UPON THE ADMINISTRATION OF ANAESTHETICS.*

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During the past five years it has been my privilege to devote almost my entire time to the administration of anaesthetics, and the more I study the subject the more I am convinced that the majority of us do not attach enough importance to this branch of our profession. Some surgeons and many internal medicine men look upon a competent anaesthetizer as an unnecessary assistant. They really feel sorry for the man who has the temerity to spend his whole time in doing such minor work in the field of medicine. The anaesthetizers are not the ones to be pitieed, but rather the patients who are anaesthetized by inexperienced men. I believe the day is not far distant when the patient will demand an anaesthetizer who knows his business as much so as the surgeon. How often has it occurred in past years that a surgeon has been called to do an operation where the anaesthetic was given by an inexperienced person. This is a bad policy when it can possibly be avoided. It is a fact that most surgeons are poor anaesthetizers, and, therefore, in each community where operating is to be done some one man should be trained to give anaesthetics. We all want our patients to have the benefit of an experienced surgeon, yet we seem to be perfectly willing to submit them to novices where an anaesthetic is concerned. One is as important as the other as far as the actual operating is involved.

In fact after the patient enters the anaesthetizing room the anaesthetizer has a greater responsibility than the surgeon. The anaesthetizer has the individual peculiarities of the patient to contend with before complete anaesthesia is established, and must attend to all stimulation, and see that the pulse and respiration are kept as near normal as possible after complete anaesthesia, and still keep the patient from straining or moving and retarding the progress of the operation. The surgeon has the pathological tissue to remove and close the wound upon a human body which is lifeless so far as his work is concerned. I am afraid that some surgeons are too quick to demand that nothing should happen to interfere with their work. They do not realize that the anaesthetizer is doing everything he can for the good of the patient, and the habit of insisting that the anaesthesia be profound, regardless of how the patient is doing, is, I think, unworthy. They must realize that the welfare of the patient is at stake. Don't be continually nagging the anaesthetizer, for some may have their judgment impaired by this.

The danger in an anaesthetic is great where the utmost care is observed, yet we see an occasional case where a nurse, or someone equally as inexperienced, is giving chloroform, when we know that it is one of the most dangerous drugs we handle. These cases are generally those that would be classed under the head of minor surgery, the surgeon thinking he can do the work and at the same time superintend the administration of the anaesthetic. Truly, it is minor surgery if we take the classification of a noted surgeon, who says: "Minor surgery is that branch of the art which is done by a minor surgeon." When a man tries to look after an anaesthetic and at the same time do any kind of operation, he is in grave danger of neglecting the one or the other to the detriment of the patient. I know there are cases when this is necessary, but they are extremely rare.

A patient takes the anaesthetic better if the preliminary preparation usually carried out for

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an operation is observed. This, I think, lessens the ill-effects during and after the administration. This and the selection of a competent anaesthetizer is the main responsibility that the surgeon has as far as the anaesthetic is concerned. The surgeons are realizing this more fully, and the result is that the mortality and suffering are lessened.

The eye, ear, nose and throat men, it seems to me, should, as a general rule, give the subject of general anaesthesia more serious consideration than they are accustomed to. They seem to think because the operation does not consist in opening the abdomen and handling the intestines, that the preliminary purge and rest and other preparations are not necessary. Again they seem to consider, because the operation is a short one, that any anaesthetic is all right. Yet we hear of cases reported where a child has died from the effects of chloroform given for a simple tonsillectomy, and where adults have had fatal results after an anaesthetic given for the simple procedure of a laryngoscopic examination. Of course, there are many cases daily that have no trouble from the anaesthetic, yet the few who do should sound a warning for more care in the preparation and the selection. Again, the habit of promiscuous anaesthesia in one's office, generally followed by these same specialists, is, I think, a very dangerous procedure. We should never lose sight of the fact that any patient is liable to die under an anaesthetic, and it isn't a very pleasant advertisement to have a patient die in one's office. I admit that this does not often happen, yet an occasional fatality has been reported which could probably have been prevented with the proper anaesthetic and assistance at hand. A hospital, whenever accessible, is the best place to administer an anaesthetic.

It has been said that practically all deaths occurring on the operating table are due to the anaesthetic. I believe that we can go further and say that many deaths after leaving the operating room are due to this cause. A profoundly anaesthetized patient is slow in eliminating any poison, and the longer this powerful drug stays in the system the more danger is there of bad effects. The ideal plan is to have the patient actively reacting upon leaving the operating room. This is not usually difficult if the anaesthetizer gradually lessens the degree of anaesthesia as the operation is being finished. Therefore it is necessary for the anaesthetizer to be familiar with the different stages of the operation and to know about how much time will be necessary to complete it. The idea that the anaesthetizer should be shut off behind a screen and not see the field of operation is wrong—just as much so as if he should watch the operation and neglect his anaesthetic. He must know what stage of the operation is being performed otherwise he cannot intelligently administer the anaesthetic because different stages require different degrees of anaesthesia. For instance, it is always a good plan to remove the anaesthetic during the dilatation of the sphincter ani; otherwise the deep breaths taken at this time will cause too deep an anaesthesia. And the same general rule applies in operations upon the penis.

It is not my purpose here to compare the different anaesthetics, but I wish to say a few words concerning ether and chloroform. We have heard much in the past about the contra-indications of ether. I am beginning to believe that ether is rarely contra-indicated where an operation is indicated, except probably in acute bronchitis and acute tuberculosis of the lungs. In practically all other conditions, I believe, ether is the anaesthetic of choice. It has been definitely shown that chloroform does more harm to the liver and kidneys than ether—that children bear chloroform badly. It has been shown, especially in labor cases, that ether is the anaesthetic of choice and that chloroform is contra-indicated in eclampsia. I wish to emphasize this point because I can see no excuse for using chloroform in childbirth. It seems to me that practically everything in this

class of patients indicates the use of the safer anaesthetic. Chloroform is more dangerous than ether in practically all operations and should never be used, it seems to me, except in very rare cases. In our clinic we have used chloroform in only two cases during the past year. Both in operations for amputation of the leg for senile gangrene—one a woman eighty years of age and the other a man seventy-five years of age. Chloroform was selected here because we considered there was some danger in ether raising the blood pressure enough to dislodge a clot and form an embolus. Both cases had uneventful recoveries.

Ether pneumonia, so-called, has been suggested as being a contra-indication to the use of ether. I think this an extremely rare condition, especially in the South. We have had two cases of pneumonia following operations in our clinic. One a case of ruptured appendix in a woman twenty-five years of age who had driven twelve miles through the country on a winter day, and who had a chill with an elevation of temperature three hours before the operation. The other a negro woman with pus tubes with apparently no reason for the pneumonia. I believe the method used in most hospitals of removing the heavy underwear the patients are accustomed to sleeping in and putting cotton night shirts upon them is responsible for many of the post-operative pneumonias.

In selecting a method of administering ether the less complicated apparatus seems to me the best. I see no reason why a few layers of gauze over an ordinary inhaler, or just laid over the nose and mouth is not all that is necessary. There has been much said about inhalers for mixed anaesthesia. I know of one case where an anaesthetizer turned the wrong valve while trying to use one of these complicated inhalers with an almost fatal result. The method we use is a few layers of gauze over the face or over an ordinary inhaler and drop the ether direct from the original can. The only disadvantage I see in this method is it takes a little more time to produce complete anaesthesia. But the advantages far outweigh the disadvantages.

The preliminary drugging before going to the anaesthetizing room is, I think, not only unnecessary, but often harmful. The claim that it aids in eliminating the fright and post-operative nausea has not proven to be such in our experience. I much prefer the patient to come to the anaesthetizing room clear-minded, for then a few words of good cheer and reasoning has a more quieting effect. The anaesthetic lessens the power of the patient to eliminate these drugs, and a bad effect is often seen. The less drugs before and during the operation, unless there arise positive indications for them is, I believe, the best plan. We have tried many of the drugs recommended and without exception discarded them.

I wish especially to speak of the use of chloretone before operations and to cite a case. A young man with an interval appendix was given chloretone the night before and the morning of the operation. We noticed the shallow breathing during the anaesthesia and gave him very little ether. He had scanty and bloody urine after the operation and died on the third day, due to what we believe to have been the effects of the chloretone.

We occasionally give morphine and atropine during the operation when indicated, but make no routine practice of it. If any stimulant is demanded the most efficient in our hands has been normal salt, either by rectum or under the skin.

The following method of anaesthesia is the one that we are now using: Have the patient come to you without any preliminary narcotic, but having been given water freely. Let no appearance of hurry or excitement take place, but very quietly examine the heart and inspire confidence in your ability; cover the eyes with rubber tissue, over which is placed damp cotton; place from twelve to twenty layers of gauze over nose and mouth

and begin to slowly drop the ether from the original can; if there is any feeling of suffocation complained of, remove the gauze and allow two or three breaths with nothing over the mouth. This will consume some time, but will allow a great deal of comfort; after one becomes accustomed to the odor, the dropping can be more rapid. After the patient is relaxed, turn the head to one side. This will prevent the tongue and jaw from falling backward, and allow any mucus that might collect to run out the corner of the mouth. If the mucus still collects, allow more air and less ether, and if necessary, let the patient cough. When the preparation is finished, roll the table in the operating room where the surgeon is waiting. Be sure that the surgeon is waiting for you instead of your waiting for him. During the operation let the degree of anaesthesia be as light as possible. This can be regulated by watching the respiration and pulse and field of operation. I do not think the eye reflex a good index, because it is rarely necessary to abolish this. After the operation apply hot towels to the face until the patient wakes.

THE MATAS BAND AS A TEST OF THE COLLATERAL CIRCULATION THROUGH THE LARGE SURGICAL ARTERIES.*

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"The surgery of the vascular system bristles with problems which still await solution, but none appear to me more important or fundamental than the study of the collateral ciculation in its behavior to occluded arteries, and in the means of testing its efficiency or inefficiency before permanently obstructing the more important arterial channels of the circulation.

"The need of preserving the function of the great vascular trunks, especially the great arteries at the root of the limbs, of the neck, and of the viscera, and the obvious dangers which attend their surgical obliteration, have always been apparent to surgeons. But the fear of obliterative thrombosis and secondary hemorrhage and the difficulties of the technic by which the continuity of the vessel can be restored are even now so grave an obstacle in the way of the accomplishment of the ideal that, in spite of the vast increase in the surgical resources by which this "restitutio ab integro" may be accomplished, many among us, even the most skillful, are led and let to follow the old beaten path, with its easy methods of obliteration, and trust to nature and the collateral circulation to supply the blood deficient in the suppressed area.

"Were it possible in every given instance to determine, before undertaking an intervention, that the suppression of the blood-vessel under consideration would certainly and inevitably terminate in a fatal ischemia and necrosis of the dependent territory, either the intervention would not be undertaken or the operator would, in doing so, prepare to avail himself of every method suggested by which the preservation of the main channel of the circulation could be assured. It is in the treatment of the peripheral aneurisms, whether of traumatic or pathologic origin, which involved the great arterial trunks at the root of the limbs or in the neck (especially those of the neck and lower extremities), and for the "bloc dissections" of the neck made necessary by malignant neoplasms or other conditions re-

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quiring a division or resection of the carotids in whole or part in the massive removal of tissue from the region sometimes necessary for the cure of malignant disease of those parts, that the desirability and utility of a test by which the adequacy or inadequacy of the collateral circulation, ante-operationem, may be determined, is most keenly and urgently felt."

In a certain fairly large percentage of cases, which increases with the age of the individuals and pathologic conditions of the vascular system, and the possible existence of occasional anomalous arterial formations (such as the imperfect development of the circle of Willis), the danger of permanently occluding such vascular trunks as the carotids, femorals or other large arteries, before having positively determined the efficiency of the collateral circulation to nourish the peripheral and dependent parts, may often be followed by the gravest consequences; in the case of the femoral with the loss of part of the limb, in the case of the carotid with the loss of the life. Heretofore our inability to solve this problem of the competency of the collateral circulation of a part has led the surgeon on the one hand to assume grave and often unjustifiable risks; or, on the other hand, the refusal to undertake the operative risk of what might otherwise be a thoroughly simple or feasible procedure.

The urgency of the need for solving these dangerous and perplexing problems has long occupied the mind of my chief, Prof. Matas, who, with his characteristic tireless and indefatigable energy, judgment and experience, has labored incessantly over these difficulties until in the very recent past he has at last given us a method, at once both simple and effective, which places the occlusion of the large vascular trunks upon a safe and certain foundation reduced to the minimum risk which must inevitably attend all surgical interventions. The result of these efforts has been the development and perfection of two distinctly different and independnt procedures.

1. The direct application to the vessel in question, through open dissection, of a removable aluminum band, especially applicable for use on the carotids in the neck, and to large vessels within the visceral cavities, but equally applicable to all large vascular trunks, and (2) a hyperemia test, for use upon the four extremities, produced with the aid of a specially devised vascular compressor upon a limb rendered ischemic with an Esmarch rubber bandage.

The Aluminum Band. This was adopted after 168 experiments conducted upon dogs by the author, utilizing the carotid and femoral arteries; the bands of annealed aluminum are about as wide as one diameter of the vessel operated upon, with a thickness corresponding to No. 20. Brown & Sharp's sheets-metal gauge, the edges are well smoothed and manicured to prevent injury to the vessel walls, one end of the band is bent or curved upon itself and it is passed around the vessel in much the same way as an aneurism needle, and moulded to the vessel with the fingers, just firm enough to occlude the lumen, by bringing the two walls in contact to a point that obliterates the pulse distal to the band, but not firm enough to traumatise or injure the intima or delicate vessel walls; the excess of the band is then cut away with wire clippers or stout scissors. Used in this way the bands are easier of application than a ligature, they stay in place perfectly, are capable of nice adjustment, do not crush the artery, and are tolerated perfectly by the tissues, and, above all, are easily removed, should occasion arise (within seventy-two hours). The study of the action of these bands upon the vessel walls and surrounding tissues was made by removing the bands after a stated number of hours, ranging from 12 to 144 hours, ½ day to six days. In some cases the band and vessel were taken out together for immediate study, in others the band was first removed and the vessel allowed to remain for a period

ranging from one week to ten days, to determine if any damage produced by the bands would eventuate in thrombotic or obliterative changes, which could not be demonstrated by their immediate removal and examination. These examinations were made macroscopically and microscopically by Dr. Gurd of the Laboratory of Surgical Pathology of Tulane University. As a result of these studies and a large number of clinical cases, which are constantly increasing, in some of which the bands have had to be removed as a result of cerebral disturbances arising after their application, have enabled us to arrive at the following conclusions:

1. It is possible to compress a vessel to the point of obliterating the pulse and maintain this pressure for a period of from three to four days, before adhesive or obliterative changes in the intima occur.

2. All the vessels clamped in this manner stood compression seventy-two hours without apparent microscopic change in the intima; some few began to show marked changes in ninety-six hours.

3. There is apparently no reason why, in occluding the great vessels at the root of the neck, chest and lower abdomen in continuity, these removable bands should not be substituted for the circular ligature, which permanently damages the artery, even when carefully applied. Furthermore, the ligature does not permit of the release of the constriction after a few hours or days of observation without certainty of thrombus formation at the seat of the ligation.

4. In view of the preceding statements, it would seem to be logical to utilize this simple method of occlusion as a preliminary test of the efficiency of the collateral circulation in all regions in which the hyperemia test to be next described is not applicable.

In addition to the cases already reported by Dr. Gessner, the following cases illustrate the practical advantages of this method:

November 16, 1910, white laborer, age 62, entered our surgical service, presenting an advanced carcinoma of the left upper maxilla. The tumor projected as a disfiguring mass from the cheek and was complicated by a large aggregation of glands which filled the left sub-maxillary and upper carotid regions. As these glands were immovable and adherent to the carotid sheath, as low down as the bifurcation of the carotid, we concluded that a radical operation would be impossible without a block dissection of the glands, which would in all probability necessitate the extirpation of the carotid branches, including the bifurcation and the upper internal jugular. We therefore decided to limit our first occlusion of the common carotid at the point of election in order to test the efficiency of the collateral circulation in the brain. This was done November 21, under local anaesthesia, by the above method after carefully noting the condition of the pulse in the opposite right carotid and in the peripheral branches (facial and temporal), which were distinctly felt, After the occlusion, it was noticed that the temporal and facial pulses on the corresponding (left) side had ceased to pulsate, while those on the opposite side remained undisturbed. The patient stood the operation perfectly, assisting us in changing the position of the head to suit our purposes.

We watched carefully for cerebral symptoms after the occlusion, but the patient never complained; the pupils remained symmetrical, there was no syncopal feeling or dizziness and only a little pallor on the affected side. The occlusion was accomplished at 10:30 a.m., the patient back in the ward at 11 a.m. He was carefully watched and reported doing well up to 6 p.m., when it was noticed that he had become aphasic and very somnolent, and almost completely hemiphlegic on the right side of the body. We were quickly notified of the occurrence by the interne of the service, when I at once proceeded to the bedside. I found the condition of the patient as above stated, the stupor amounting almost to coma, with

vomiting, marked dyspnea and rapid, weak pulse, 120; temperature subnormal.

All these manifestations came rather suddenly. After some unfortunate delays the wound was reopened and the band removed. This was almost one and a half hours after the brain symptoms had been recognized. After the removal of the band the circulation in the carotid and its branches was quickly restored. The peripheral pulses in the facial and temporal could be felt, and the artery pulsated where the band had previously compressed it.

No damage was done to the artery apart from a slight edematous indentation. The condition at once began to improve, the pulse slowed down and became normal, while speech and motion slowly returned. This improvement was gradual, not sudden, and by November 24, three days later, his condition was practically normal. Here, then, we have a conclusive demonstration of the complete recovery of the brain after a period of ischemia in the left hemisphere lasting nine hours, and a complete functional recovery in about sixty-two hours after the removal of the occluding band. It is probable that if the band had been removed immediately on the appearance of the first symptoms the period of repair would have been considerably shortened. As an operative cure was out of the question in this case without a removal of the carotid which was involved in the mass of glands, the case was abandoned, and after some months died. A post-mortem removal of the carotid and its branches failed to show any difference from the normal appearance and the point at which the band had been previously applied could not be recognized.

Another interesting and strikingly illustrative case of the value of the band is the following case which occurred in the practice of Dr. Charles H. Mayo. The patient, an aged woman over 60 years of age, had suffered from a relapse of all the exophthalmic symptoms, complicating a pulsating exophthalmus with general circoid enlargement of the vessels of the cranium and face, in which a ligation of the right carotid had been done twenty years previously.

In this first operation an attempt had been made to ligate the dilated vessels around the orbit, resulting in the loss of an eye. When the patient came to Dr. Mayo there was an enormous protusion of the left eye, and pulsating veins on that side of the head. He determined to occlude the common cartoid by the method we have described, and proceeded to do so under cocaine anaesthesia; when he was almost through with the operation the patient remarked that she could not see anything; "the light was going out." He immediately began to loosen the band until the vision returned, and allowed it to remain in this position of partial occlusion. Following the operation her vision was better than before. In talking with Dr. Mayo last summer I learned that she was doing well with the clip still on her carotid. This was a brilliant and convincing demonstration of the superiority of the band over the ligature. If a ligature had been applied, irremediable damage to the artery would have followed with disaster to the patient.

It is further to be especially recommended that these bands be applied to the carotid arteries, whenever possible, under local anaesthesia (in all of our cases this has been the method employed). In this way one is enabled to at once determine by the sensations of the patient if any disturbances arise which might otherwise be doubtful or obscured under a general anaesthetic.

We now come to the consideration of the second procedure, or hyperemia test. As the time at my disposal is quite limited I shall have to hasten on to a conclusion and will be forced to content myself for the present with a description of the technic of the method as laid down by Prof. Matas. "We may take, for example, a case of popliteal aneurism, which we may select as the most frequent ex-

ample of the surgical type of this disease, the first step to be taken in applying the test is to put the patient on his back and expose the affected limb on a white cloth or sheet, which will show the contrast of the color of the skin to the best advantage. A good daylight is, of course, necessary.

"Begin by determining the line of the femoral in Hunter's canal, and adjust the block of the compressor over this line at a point nearest the aneurism without encroaching upon the sac. Then tighten the compressor on the artery until all pulsations and sounds cease in the aneurism and the volume of the swelling is reduced. At this juncture, if there is a peripheral pulse in the dorsalis pedis and posterior tibial, the pressure should be continued until these peripheral pulses cease absolutely.

"After keeping the tourniquet on for some time while the aneurism is absolutely still and collapsed, some change may be noticed in the color, the temperature and the sensibility of the skin below the knee, and especially of the foot and leg. As the pressure is continued, the limb will become colder and paler at the digitis, and the patient will complain of numbness and a dead feeling in the foot and leg. Observations on the color and temperature of the foot while the aneurism is "still" are in order. It is probable that as long as the collateral circulation is efficient, the color of the limb, while becoming markedly paler at first, and for some time after the compression is continued, will remain at a standstill or improve according to the efficiency of the collateral circulation. The variations in color noticed after simple compression of the main trunk, above the aneurism, are not always marked enough to allow the observer to arrive at definite conclusions, especially as the bulk of the blood originally in the limb before experiment began has not been displaced by forcible exsanguination with elastic pressure.

After familiarizing himself with the position of the artery at the point nearest the aneurism, where it can be compressed with accuracy, the assistant is prepared to temporarily relax the pressure and proceed to the application of a broad Esmarch elastic bandage, which is to be adjusted snugly from the tips of the toes, compressing these more evenly over several layers of gauze, and continuing the roller until the upper level or pole of the aneurismal swelling is reached. At this level the bandage is firmly held in position with a clamp and fixed while the operator readjusts the compressor until all pulsation in the sac is absolutely arrested and the aneurism is stilled. The same tactics will apply equally well in arteriovenous aneurisms.

"With the finger of the operator constantly on the aneurism to make sure that its pulsation is absolutely controlled, the elastic bandage is held in place for five minutes in old subjects or eight in the younger patients, especially in dealing with traumatic cases (in these less risks of thrombosis, embolism and injury to the artery). The elastic bandage is now quickly removed, while the compressor still secures the main artery.

"Close attention must then be given to the returning hyperaemic wave, and the progress of the blush is noted as it descends, rapidly at the first, in the zone immediately below the level of compression."

"I believe I have said enough to direct your attention to at least three propositions: (1) That in the treatment of the surgical or operable aneurisms of the extremities, a preliminary knowledge of the resources of the collateral circulation is very desirable, if not absolutely necessary, in view of the possible obliteration of the main trunk in the course of the intervention; (2) that in the modification of the "hyperaemia" test which I have described, and which has thus far satisfied my clinical needs (in so far as the peripheral aneurisms of both extremities are concerned), we have a simple, practical means of obtaining approximate, pre-operative information in regard to the status of the collateral circula-

tion; furthermore, (3) that the same method may prove of value by systematic compression of the main trunk, in developing the collaterals when these are found deficient. Finally, while fully realizing that the suggestion embodied in this paper represents only a crude and unfinished effort to solve a really important problem, I merely submit it for discussion and further investigation, hoping that the simplicity and ready application of the method proposed will commend it to the attention of practical surgeons.

Before concluding these remarks I would like to say that the value of this method has already been accepted and applied by some progressive surgeons, a case having recently been reported in the transactions of the New York Surgical Society. Two cases of arteriovenous aneurism of the femoral vessels have been recently tested, but not operated, by Prof. Matas.

For a more thorough review of these subjects I refer those interested to the original publications which appeared in the Journal of the A. M. A., January 28, 1911, and in the Annals of Surgery, January, 1911. In closing I will add that Prof. Matas will be glad to hear from any one making a practical application of these methods, as well as operations upon aneurisms by the reconstructive or obliterative plans.

STREPTOCOCCUS INFECTIONS OF THE THROAT.

By RICHMOND McKINNEY, A.M., M.D.,
Professor of Diseases of the Nose, Throat and Ear, University of Tennessee College of Medicine; Oto-Laryngologist to the City Hospital.

On two previous occasions I have contributed articles to the literature under the same title as that which I am presenting at this time, and each successive article necessarily was more or less an amplification of the previous contribution or contributions.*

It has long been recognized that the streptococcus under certain conditions becomes a morbific organism of more than ordinary virulency, and the question has presented itself as to why inflammation of the mucous membrane, due to this organism, should not invariably assume the malignant type that it does when it is evidenced in the form of erysipelas of the dermal portions of the body. Morphologically we have the same bacillus in various inflammations of the mucosa of the fauces that we find in erysipelas, yet it is only occasionally that inflammation of the throat assumes a type that causes us to be apprehensive of the outcome of the case. The fact that the association of the streptococcus with the bacillus of diphtheria tends to produce a graver condition is well recognized, and the destructive effect upon the kidneys and heart of the patient with this character of mixed infection usually is ascribed to the action of the streptococcus. Therefore, with this type of organism, which so readily may assume malignancy, an angina showing a predominance of streptococci on culture always should be regarded with apprehension, and most carefully observed, with a view of anticipating complications, and of sustaining the involved organs should such occur.

As types of streptococcic infections of the throat severely maglignant, I shall quote three

*R. McKinney—Streptococcic Infections of the Throat. Journ. A. M. A., May 29, 1909.
R. McKinney—Streptococcic Infections of the Throat. Med. Record, May 7, 1910.

*Read by title before the American Academy of Ophthalmology and Oto-Laryngology, Indianapolis, Ind., September 26, 27, 1911.

cases from my own practice, which may be added to those reported by me in previous papers.

B. B. H. Jr., aged 22 years, a resident of Memphis, came to me March 6, 1910, with the statement that two weeks before this he had developed what was called tonsillitis, affecting the right tonsil. He had had fever continuously until about three or four days before coming to me. According to the patient and members of his family who were with him, the tonsils had been covered by a whitish membrane. About five days previous to this the neck beneath the right tonsil began to swell. The patient thought that there had been a lump there from the first of the attack. He was suffering with intense pain in the throat, especially at night. Examination showed both tonsils hypertrophied and greatly congested, but no false membrane. There was a large glandular swelling the size of a hen's egg in the parotid region on the right side. There was no fever at this time. A swab was taken from the throat, and the patient sent home and to bed. The next evening at 8 o'clock the temperature was 102. There was much pain and the swelling was larger and very hard. Morphine was required to give the patient a comfortable night. The next morning the swelling had continued to increase and the temperature was 101. Culture from the throat showed a rich growth of streptococci. March 9, at midday, 20 cc. anti-streptococcic serum was given, which was repeated every day for six days subsequently. The customary attention to the general condition was had, with strychnine for the heart. The swelling continued to increase in size until the young man's face was quite distorted by the protrusion of the mass on that side. Temperature continued to run high. There was nothing about the swelling resembling Ludwig's angina, either in location or otherwise. Fluctuation becoming apparent low down in the swelling, I urged opening at this point, but a consultant, the family physician, advised delay, which appealed to the family, although the patient himself asked that an incision be made as advised by me. The condition persisted until about the middle of March, that is to say, after some nine or ten days, when the temperature subsided and the swelling began to decrease. This change for the better continued until the 18th of that month, when the fever again shot up and the neck began to swell again. Decided fluctuation was present, and the family continuing to decline operation, I withdrew from the case, but learned after a day or two that the family physician finally opened the swelling at the point of fluctuation, with a discharge of green, foul-smelling pus, and with immediate improvement and gradual complete recovery of the patient. I should add that urinalysis on several occasions showed considerable albumen, and blood count revealed marked leukocytosis.

This was an exceedingly severe angina, in which the patient was for a number of days in a very grave condition, and in which the streptococcus was absolutely the only pathological organism to which the condition could be ascribed. Furthermore, hypodermics of as much water might just as well have been used so far as any benefit was concerned as was derived from the anti-streptococcus serum used in this case, which has been my observation of the action of this serum in a good many instances.

The next case has even more interesting aspects: On December 1, 1910, Miss Louise W., aged 22, was seen by me in consultation with Dr. S. D. Terrell, of Memphis. This history was obtained: Following an attack of nausea and vomiting, two or three days ago, she developed "sore throat," with rise of temperature and great prostration. When seen by Dr. Terrell she had a pseudo-membrane on both tonsils, with low grade temperature and indication of sepsis. Culture from swab was reported as streptococci associated with staphylococci. The day before I saw her her tongue began to swell, and completely filled her mouth

during the night. Applications of ice brought lessening of the swelling. On this day she had received 7,000 units of antitoxin.

Examination by me showed both faucial tonsils covered with a necrotic grayish membrane, diphtheritic in appearance. There was some slight sublingual swelling with edema. The pulse was fairly strong, temperature 101. Another swab was taken, with some of the membrane, and a detergent spray solution advised. Supportive treatment was given by Dr. Terrell. Culture from the swab and membrane taken by me again revealed the predominance of streptococci, with staphylococci, but nothing else. Urinalysis showed a large amount of albumen.

I did not see this patient again, but obtained the subsequent history from the family physician, Dr. Terrell. The young lady gradually improved and gained strength, but after being up for a week or ten days, evidently feeling entirely well, one day went to bed, saying that she had gone to bed to die, and from this on she gradually but surely went down. In the course of a week or ten days she faded away like a lily, and died without again leaving her bed.

The description of this case reads like that of a case of diphtheria, presenting a mixed infection, but the most careful and repeated examinations of culture grown from both swabs and portions of membrane failed to reveal the diphtheria bacillus, which surely would have been evident where such malignancy was shown as in this instance, were the condition due to the bacillus diphtheria. The destructive effect upon the kidneys, to which doubtless must be ascribed the death of the patient, undoubtedly was due to the action of the streptococcus.

On February 6, 1911, I was asked by Dr. S. D. Terrell to see Harry L., aged four, residing a few doors from the case just related. This child had experienced an attack which had been diagnosed as scarlatina about two weeks prior to the time that I saw him. His throat had been swollen, both inside and out, for several days, during which time both ears discharged pus. He had been having high fever, septic in character.

Examination showed both parotid glands greatly swollen. Both faucial tonsils were swollen and covered with pseudo-membrane, which left a bleeding surface on its removal. Both ears were discharging pus freely. Temperature was 103.

A piece of membrane from the tonsils was removed and placed in a culture tube. This the next day brought a report of almost pure streptococcus growth. That day a swab was taken and also another piece of membrane. The same report was returned.

To summarize this case briefly, would say that the boy ran a septic temperature, with great prostration, for about six weeks, receiving numerous injections of anti-streptococcic serum during this time. Eventually an abscess formed back of the left ear in the fibres of the sterno-cleido mastoid muscle, but not over the mastoid process, this abscess being opened, with a free discharge of foul pus, and another secondary abscess of similar character formed over the left hip, this also being opened by the attending surgeon, Dr. Casa Collier, with similar results. The child was also seen by Drs. J. B. McElroy and Frank Jones, of Memphis. Recovery followed, with a stiff hip joint. The child's condition was too bad at any time to consider any mastoid surgery, and he now has only a slight discharge from the left middle ear.

Here is an example of a very serious secondary streptococcus infection, and it illustrates clearly how very virulent this organism may become under certain conditions. In this case again we have an exhibition of impotency in stock preparations of anti-streptococcus serum. The field for autogenous vaccine treatment in these cases is wide, and should I again encounter such infection I intend to avail myself of the opportunity to have autogenous vaccine prepared and to test its effi-

cacy. Lack of laboratory facilities in isolated localities would prevent the application of this form of treatment to a great extent, but in our large towns and cities, where good laboratory equipment is found, there is no reason why an autogenous vaccine should not be prepared in from twenty-four to forty-eight hours. A successful polyvalent serum seems to be impractical, and even if it were practical, it is more than likely that stock preparations frequently would be found to lack the valence demanded by a particular infection.

The question of diagnosis enters largely into these cases, and here the greatest likelihood is that of overlooking diphtheria. When this question is present I think the patient should have the benefit of the doubt, and receive a large injection of anti-diphtheritic antitoxin. This may exercise no influence on the ultimate course of the disease, but so many cases of streptococcus infection of the throat present the appearance of diphtheria, that it is best to at least give a good-sized dose of antitoxin where the condition is in the least suspicious. When seen by me a week ago, May 11, 1912, there was no aural discharge, and hearing was normal.

I believe that a large portion of the fatal cases of diphtheria seen nowadays, which fatalities do occur at times even where antitoxin is early used, are due to the pernicious action of the streptococcus associated in mixed infection. Certainly those cases of a pronounced type of mixed infection of this character run a malignant course. Yet, on the other hand, it cannot be questioned that there is a type of streptococcus infection of the throat, without the association of the diphtheria bacillus, producing great prostration in the patient, and assuming occasionally a most malignant aspect.

Memphis Trust Building.

A CASE OF OVARIAN PREGNANCY.*

By J. B. ELIOTT, M.D.,
Moundville, Alabama.

Patient, Negro, Age 26—Gave no history of specific troubles, but presented some signs of having had syphilis, though she denied it. There was no hair on her scalp or pubis. Her mother said the patient had been a taker of teas, and a user of other so-called preventatives of pregnancy, and abortifacients. She had been fairly regular in menstruating, most of her life since fourteen years old. Had one child now living, seven years old.

In May last year (1909) she had a miscarriage, and has menstruated none since then till in November. November 8 she first came under my observation. At the time she first consulted me she was apparently in good health, except that she was not menstruating, and asked me to treat her for her condition, which I concluded was only one of amenorrhea. She was having some slight symptoms of an approaching menstrual epoch. I saw her two days later. She was then suffering from malaria complicating the menstrual symptoms. She was relieved till a few days later when the menstrual epoch came in about its normal way, or as it usually occurred with her. In the latter part of December she menstruated profusely for about ten days. January 14 and 15 I treated her for an attack of influenza. In February she saw just slight signs of menstruation. March 1 she came to my office complaining of some abdominal swelling, located in the uterine region, and some digestive disturbance. Said she began to notice the enlargement of her abdomen as soon as she got up from the attack of la grippe in January, but felt special pains only occasionally, which

*Read before the Hale County Medical Society at its April meeting, 1910.

she described to be, and thought were, gaseous. She thought she was pregnant, and looked as if she were. I put her on a simple treatment for the digestive symptoms.

March 4 I was called to see her, and found her suffering severe pain that had started on March 1, as she returned from my office over the rough, swamp road.

The pains had grown worse till by the 4th she was suffering terribly, as she described it. The pains resembled abortion pains, or those of a threatened miscarriage, continuing all the time, but more severe at intervals of from fifteen minutes to an hour. Her pulse was 114, temperature 100 1-2, abdomen enlarged, very sore and painful to touch, with a smooth, shiny appearance, with an oblong, glossy elevation at and around the umbilicus. This particular point was extremely sore. While the entire abdomen was tender, most of her pain was in the left side. On percussion dullness was elicited and the pain intensified. Fluctuations were felt at the top of the tumor, with a semi-solid or spongy feeling mass at bottom, or nearer the symphysis. Vaginal examination showed the uterus pressed down, and of a normal, or practically normal, size. Later in the day I saw her again. Pulse and temperature were the same as in the morning. By this time a thick, tough, glairy and bloody mucus-like discharge was coming from the uterus. All day she had been on a sedative treatment, which had accomplished nothing in the way of relief. This treatment was continued, except that it was made more sedative. By 10 o'clock next morning (March 5) I received word to send her something to keep her quiet that day, and not to visit her any more till I heard again how she was. She was reported better, and had been all the night before. All the time after my first visit and examinations I felt sure of an ovarian cyst, or a tubal or ovarian pregnancy.

In the afternoon of the 6th I was again sent for. The patient was still suffering constant pain. Pulse 118, temperature 101 1-2. Her abdomen had continued to enlarge till it had gotten to be the size of an abdomen at about the seventh month of pregnancy as compared to an appearance of about a three or four months' pregnancy only three days previously. The pain on touch was more severe than before. Patient was complaining of painful and frequent urination, due to pressure. Urine was voided plentifully. Dr. Williamson was called in consultation the 7th and confirmed my diagnosis of a cyst or ruptured extra-uterine pregnancy. We catheterized and got about four ounces of urine, then we tapped the abdomen in the median line about half way between the umbilicus and symphysis. The fluid that came away was very bloody water, the canula at times becoming plugged, apparently with clots. We then thought we had a malignant cyst with twisted pedicle. The amount of fluid drawn off was between one-fourth and one-half gallon. The tapping furnished some relief. Patient was then put on just codeine sulphate enough to keep her quiet, and Epsom salts to keep her bowels freely open. This treatment was carried on for one week, by which time pulse rate had returned to 98 to 100, and temperature had reached 99 1-2.

On March 15 she was sent to a sanitarium in Tuscaloosa, and operated on the 16th. The abdomen was opened in the median line. The mass was found to be bound by numerous adhesions, all of which were very easily broken up. One band of adhesion about two inches broad extended from the front of the mass to the diaphragm and was adherent all the way. Just the weight of the hand was all that was necessary to break up the adhesion. An attempt was made to move the mass, but it broke up and had to be removed part at a time. It was a hematoma containing both old and fresh looking clots, considerable dark, unclotted blood, some fresh blood and large amounts of hypertrophied ovarian tissue. Proper ligation was done and the sac, including the entire left ovary, was removed. The abdominal cavity was washed out with normal

salt solution, part of which was left in the abdomen. The total mass would have weighed about fifteen pounds. It was carefully examined for a fetus, but none found.

While we found no fetus, we were practically sure of an ovarian pregnancy that had been ruptured long enough for the fetus to have disintegrated and been absorbed, with a continuous hemorrhage into the sac.

The patient had an uneventful recovery and is now doing nicely.

DISCUSSION.

Dr. Crisler, Memphis, Tenn.—Such a case of ovarian pregnancy is very rare, doubted by many to have ever existed. Dr. Elliott, I take it, is sincere—I give him credit for that—and while I believe that he thought he had an ovarian pregnancy, it occurs to me that his report would lack evidence, because he had not a pathological report of every feature showing the existence of extra uterine pregnancy. Take a tumor weighing at least fifteen, and probably twenty pounds, and you have a pretty big tumor, and, I fancy, in pregnancy you would find a pretty good sized foetus. The case is such that, for want of accurate pathological report, the doctor would have right to believe that he had a case of ovarian pregnancy. I believe, of course, that those things happen, but they are very rare, and I am sorry he did not go into it more deeply and convince everybody that he had a case of that kind, instead of just stopping and saying he thought he had it. I want to ask the doctor what positive proof he had of pregnancy. Formerly it was thought that ovarian pregnancy was impossible, but it has been proved in late years that it may happen, although it is very rare, and generally, instead of being a true ovarian pregnancy, it is a tumor—an ovarian cyst with a ruptured vessel filled up full of blood. I would like to ask the doctor to state positively why he thought the patient was infected.

Dr. Elliott—Mr. President and Gentlemen: I appreciate the criticisms as well as the interest felt in the paper, and in response to any criticism as to our tapping that abdomen will say that you will notice that in three days' time that abdomen had grown to assume the appearance of a seven-months' pregnancy as compared with an appearance of a three-months' pregnancy three days before. We were away off down there in a river swamp, five miles from the nearest railroad station, and the woman in no condition to go to a hospital and her abdomen still enlarging and she was growing worse all the time. With an increase in size that fast, we felt sure we had a good amount of some kind of fluid and we thought if we could get some of it out of her and afford the patient some relief it would be the proper thing. We knew if we had her in a hospital the simple thing would have been to open her and remove the tumor, but the circumstances were such that we could not. Operations of any nature, whether major or minor, are unsatisfactory if done in a negro house and under the circumstances existing there. We did it as a matter of relief to the patient. That abdomen was still growing and becoming more painful all the time; we catherized her so as to be sure the bladder was out of the way. That is why we did the justly criticizable thing in tapping instead of opening the abdomen.

Now as to Dr. Crisler, who wanted to know what evidence we had of ovarian pregnancy, we had more evidence of that than anything else. We had an absence of menstruation for six months; she began to menstruate a little bit in November and in December, such as you usually find in ovarian pregnancies. She had profuse menstruation for about ten days; in February it appeared again, but just slightly. Those things all go along with ovarian pregnancies. That was the best conclusion we could arrive at without going into a microscopic examination of the tissues. We decided we had a case of ovarian pregnancy, which, we believed, took place only a very short while before the rupture happened, and when it did rupture, why, the foetus was small and it could have been overlooked in that mass or could have been possibly disintegrated. We had, from a medical point of view, more evidence of an ovarian pregnancy than of anything else that came into our minds.

While we flushed out there, the mass, when we went to remove it, broke and we had there in the abdominal cavity quite a number of blood clots, some of them old and very tough, and we washed them out. We thought it was the best way to get them out. Then, as some of the doctors said, we have good authority for flushing out and some against it. We washed it out simply because we thought it was the best thing to do under the circumstances—better than to wipe it out.

I believe I have nothing further to say.

THE FIRST BOOK ON PELLAGRA BY SOUTHERN AUTHOR.

PELLAGRA.

By George M. Niles, M.D., Professor of Gastro-enterology and Therapeutics in the Atlanta School of Medicine, Atlanta, Ga. Octavo of 253 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1912. Cloth, $3.00 net.

This volume of some 250 pages presents the subject of Pellagra in Dr. Niles' characteristic, clear and concise style. His subdivisions of the subject matter, the splendid bibliographic and general index and the illustrative cuts make the reading of the subject facile and profitable.

The chapters on the History of Pellagra, its incidence in America, the Symptoms and Clinical Course of Pellagra and those on Treatment and Prophylaxis are especially interesting and valuable.

His remarks on the dietetic, hygienic, hydrotherapeutic and medical treatment may be read by all with benefit to reader and patient.

OVARIAN PREGNANCY.*

By R. P. STAPLETON,
Hattiesburg, Miss.

Mr. Chairman—In the discussion of the paper on "Ovarian Pregnancy," I desire to report a case that occurred in my practice last spring.

Mrs. F., white, aged 32, large, stout, married, had had one child seven years ago. Came to me for treatment. Before examination I found what I took to be a tubular abscess in the left side. Patient had been suffering from leucorrhoea for a long time. I also found symptoms of pregnancy, and so expressed myself to patient. This she would not believe, as she had been menstruating regularly.

Dr. Crawford saw her with me and agreed with me in my diagnosis of pustubes. An operation was advised to which patient readily consented.

On entering the abdomen we found, instead of a pustube, a large ovarian cyst, or abscess, as large as a baby's head. This we succeeded in removing, together with the tube, without rupture. We found the right ovary very much enlarged, perhaps two or two and a half inches in diameter, which we also removed, together with right tube.

Before opening the cyst it was found full of pus, and in the right ovary we found a little, well-formed fetus of six weeks or two months gestation.

*Read before the Southern Medical Association at the meeting in Hattiesburg, Miss., November 14-17, 1911.

BOOK REVIEWS.

EMBRYOLOGY.

By Frederick Randolph Bailey, A.M., M.D., and Marion Miller, A.M. Second edition, 672 pages, 515 illustrations. Cloth, $4.50 net. William Wood & Company, New York.

This book was originally "an outgrowth in the course on embryology given at the Medical Department of Columbia University," wherein the authors were administering that course. The text is freely and finely illustrated, and at the end of each chapter some "Practical Suggestions" are found which afford many welcome and practical hints to the laboratory worker on the structures described.

No subject germane to medicine is more fascinating than embryology, and such is the structure of this work that its attractions are made stronger by the clear, unbiased manner of reaching unavoidable conclusions along undeviating channels of reasoning. The 148 pages devoted to the plan and development of the nervous system and organs of special sense are alone worth the price of the book.

An appendix of some ten pages is devoted to matters of general technic.

SURGERY OF DEFORMITIES OF THE FACE.

Including Cleft Palate. By John B. Roberts, A.M., M.D., Professor of Surgery in the Philadelphia Polyclinic, Surgeon to the Methodist Hospital, etc., Philadelphia. Cloth, 270 pages, 273 figures; $3.00 net. William Wood & Company, New York.

It has seemed to the reviewer that the subject of plastic surgery has heretofore received too little attention in our schools of medicine.

Often it is thrust into a position of secondary importance, so that little is heard of it.

In the published examinations of State Boards, if any question bearing especially on this point has been made public this reviewer has not seen it.

In the first chapter of this book a few pages are devoted to a history of the "Development of Plastic Surgery," and they are full of interest. They show that early in the nineteenth century Carpue in England and Graefe in Germany "by their historical researches showed that operators in India, Sicily and Italy have been wont in previous centuries to make new noses and lips from the skin of the forehead. . . . " Until that time the possibility of such operations "had been practically unknown to the scientific world for a couple of centuries."

In India the repair was often necessitated by jealous husbands, who "cut the noses off their wives" when suspicious of their virtue. The wonderful advances made in plastic surgery during the life of the past and present generations is fully described in this work, together with all technical instruction necessary, fully illustrated by suitable engravings.

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Next Meeting Jacksonville, Fla., November 12, 13, 14, 1912.

Meetings of State Medical Associations.

The weeks beginning April 9 and ending April 20 witnessed several important meetings of State Medical Associations. The Mississippi State Medical Association met at Jacksonville, April 9-11.

The Alabama doctors convened at Birmingham from the 16th to Friday the 19th, and on the same days the South Carolina Medical Association conferred at Columbia.

From the 17th to the 19th the Georgia M. D.s also discussed the many serious problems now confronting them.

From the 23rd to the 26th the Louisiana Medical Association held its annual meeting at New Orleans. At all these interesting meetings, except at Jackson, Miss., the Journal was represented by its Editor-in-Chief, and he returns to the tripod brim full of new ideas, fresh plans and love for his brother doctors.

The usual program of speeches of welcome, reports of officers, medical essays and discussions, interspersed with various hospitable demonstrations by the home doctors prevailed, with slight variations, in all the meetings.

The interest felt by leading physicians everywhere in medical progress is demonstrated by the large number of visiting doctors who, from other states and organizations, attend these meetings and contribute papers and discussions.

Much time was devoted in all the meetings to consideration of pellagra, but such subjects as meningitis, hygiene, eugenics, etc., were not neglected. Every year shows improvement upon its predecessor in the scientific and literary character of the papers read. It is a source of pleasure to this Journal to express its high regard for the large number of valuable articles recently read and discussed before the meetings of the State Medical Associations. They will be published in the vari-

ous state journals. The Editors have not requested, nor will we accept, for publication any of the papers read before State Medical Associations that conduct their own journals or have contracts with privately owned journals. We feel that the State journals are the proper mediums for the publication of such papers. The Southern Medical Association works in complete harmony with the various State Associations and its journals. The following are the officers elect of the General Southern State Medical Associations that met during the month of April:

MISSISSIPPI: President, Dr. S. W. Glass; Vice-Presidents, Dr. J. C. Walker, Houlka; Dr. W. W. Parks, Louisville; Dr. E. C. Parker, Gulfport; Secretary, Dr. E. F. Howard, Vicksburg; Treasurer, Dr. L. B. Sparkman.

ALABAMA: President, Dr. H. T. Inge, Mobile; Vice-President, Dr. Blair, Sheffield; Secretary, Dr. J. N. Baker, Montgomery. Members of State Board of Health, Dr. R. M. Cunningham, Birmingham, Dr. Chas. A. Mohr, Mobile.

SOUTH CAROLINA: President, Dr. Charles M. Reese, of Charleston; Secretary, Dr. E. A. Hines, of Seneca.

GEORGIA: President, Dr. W. W. Pilcher, of Warrenton; First Vice-President, Dr. J. W. Palmer, of Ailey; Second Vice-President, Dr. T. H. Hall, of Macon; Secretary and Treasurer, Dr. W. C. Lyle, of Augusta.

LOUISIANA: President, Dr. B. A. Ledbetter, New Orleans; Vice-Presidents, Drs. G. C. Candles, Shreveport; George S. Bell, New Orleans, and J. L. Adams, Monroe; Secretary, Dr. J. D. Martin, New Orleans; Treasurer, Dr. Maurice J. Gelpi, New Orleans.

Report of the Augusta Board of Health.

Greater Augusta, Ga., has demonstrated her claim to greatness, by realizing that the health of her citizens is her most important and valuable business asset.

Augusta organized, some thirty-four years ago, a Department of Public Health and manned it with her foremost doctors and business men, supplied the wherewithal, and bade them "go ahead." The *Thirty-fourth Annual Report* has now been issued, and shows how Greater Augusta has gone ahead. There is an old saying: "Money talks." Here is a whisper from Augusta money. It is from the "Financial Statement of the Department of Public Health for the fiscal year ending November 30, 1911." Listen:

Pay roll, bacteriological laboratory $637.50. Pay roll, meat and milk inspection, $2,224.86. Pay roll, sanitary inspection, $9,7j7.96. Pay roll city physicians, $4,316.66. And there are others. Indeed, the total available sum at the disposal of the Board is given as $30,848.40.

The Board of Health of Augusta is still composed of leading physicians and business men. Their work is of inestimable value to the city and its inhabitants and the latter consider the laborer worthy of his hire. The leading spirit is Dr. E. E. Murphey, President and ex-officio Health Officer, and he is ably seconded by his eight fellow members. Their terms expire May 7.

The report is physically a work of art. It is six inches by nine in size, contains eighty-two pages besides the covers, and is printed upon tinted, expensive cameo paper so dainty that it seems more appropriate for a bridal supper menu than a statement from a Board of Health. There are many concise, illuminating statements, such as: "A new cause of death, Pellagra, is responsible for thirty deaths during the year gone by." Twenty-four were whites, six colored. Again:

"In 1904, without milk inspection there were 315 deaths of children under five years of age. In 1911, under milk inspection there were 158 deaths of children under five." During the year ending November 30, 1911 there were 653 births and 854 deaths." No doubt the reports of births were here, as elsewhere, incomplete. Dr. Murphey and his co-workers deserve all praise. They have done a great work also shown the rest of us how to do it.

Fee-Splitting—A Natural Result.

The editor of the American Journal of Clinical Medicine promulgates a few positions in his April number, to-wit (though perhaps not word for word):

First—Fee-splitting is the natural result of the enormous disparity between the fees paid to physicians and those paid to surgeons and other specialists.

Second—Being a natural result it will persist until the cause is removed

Third—"There is nothing essentially wrong about fee-splitting, so long as"—and he proceeds in a vague, uncertain way to express some opinions on how to keep it from being wrong; but those opinions are not illuminating, or creditable to medical journalism.

Fourth—Publicity is the first step in the settlement of the whole problem.

There we have it in a nutshell—the etiology, course and cure of the disease. How simple! And like most explanations of undesirable conditions it suggests similarities and comparisons; for instance, the cashier of a great bank is impressed by the "enormous disparity" between his salary and the abundant wealth with which he is entrusted. As a "natural result" he seizes a favorable opportunitly to split off a few yellow-back bills from one of the piles. There is nothing "essentially wrong" in lifting a bank note from a pile, especially as no one knows it, and he keeps the books. And "publicity" might stop it, if unexpected investigations could be made of unprepared books. But public denunciation of the disease only magnifies the disgrace without curing the evil. Publicity sounds right, though, and like many other doctors without eminence we are often more interested in the therapeutics of a disease than in its remote ancestry, and so it is in our regard for the molecular, moral disintegration called fee-splitting.

So when the editor of the A. J. C. M. prescribes "publicity" we want a little more information; for there are different forms of publicity. Dr. Reed administered a dose of it which, while it may have cauterized some of the ulcers, certainly inflicted unnecessary, unsightly and conspicuous scars. But we have not yet seen any announcement of convalescence of the infected ones. No more of that sort, please.

Does our editor mean that the parties to the splitting transaction should publish the fact? Let's see! Would not Mr. Pater Familias be recalcitrant if Dr. Bunco told him that though he received for Dr. Braggo a thousand dollars for the hysterectomy performed on Mrs. P. F., yet that eminent gynecologist was satisfied with seven hundred, and Dr. Bunco retained the other three hundred as a commission?

"You did not earn it," he would say, "and Braggo accepted the seven hundred and was satisfied. I have paid your bills without any discount, doubtless as much as you thought your service worth. I charge you now with taking my thousand dollars under the false pretense that it was for Braggo, when he did not ask or expect it. You took from me three hundred dollars, which you did nothing to earn; you made me believe it was all to pay Braggo; but you put it in your own pocket. Why did you not tell me before hand?" "Because you would not have paid it," said Bunco, if the truth is in him.

The present writer cannot conceive of any sort of "publicity" that would reconcile the average citizen to paying his family physician a fee many times larger than he would charge for weeks of faithful service, simply because he recommended a certain surgeon to do a certain piece of work. The way to stop fee-splitting is the way we stop any other infringement of the laws of God or man; that is, by conviction, punishment and disgrace. The county medical societies are the proper tribunals to administer justice and inflict punishment, and they are rapidly assuming that duty and responsibility. Vague generalizations may amuse

and divert, but will have no practical effect. Hysterical denunciations, especially in the lay press, can do only harm to all concerned. But the steady, determined efforts of the county societies, through committees and individual observation, fearlessly pursued, will have a restraining effect upon the guilty, even though undiscovered, and the disease will die out.

But the effort must be sustained. There must be no let up, no half-way condonation of graft as not essentially wrong. Make no compromise with dishonor!

An Old and Stable Institution.

It is a sign of good work when an institution entirely depends upon the good opinion of the people for its very existence, lives and grows and prospers so that, as in this instance, its thirty-eighth annual report shows the most satisfactory year in its history. Such is the case with the Cincinnati Sanitarium, whose 38th annual report lies upon the editor's desk. Of course it is, to a certain extent an advertisement, yet it is also a statement of facts, some of which are of general interest.

The Journal takes this opportunity to congratulate an old friend upon its continued and well earned prosperity, and to compliment Dr. F. W. Langdon, the Medical Director, upon his successful administration.

Vaccine Inoculation Prophylactic and Curative of Typhoid Fever.

This is the title of an interesting paper read by James M. Phalen, M.D., Captain, Medical Corps, U. S. Army, at a joint meeting of the Philadelphia Pediatric Society and New England Pediatric Society with the Section on Pediatrics, New York Academy of Medicine, Nov. 9, 1911, and published in the A. M. A. journal, January 6, 1912.

The article is a model for simplicity of expression and force of statement, and the statistical summaries presented are unanswerable. Not that they will convince everybody. The statistical history of vaccination against small pox also present an impregnable array of unimpeachable facts. For more than one hundred years the experience of every city and of every army invariably confirms our faith in the efficacy of vaccination, yet in this year of grace, 1912, the Governor of a great state has, in obedience to legislative edict, appointed a "Pennsylvania State Vaccination Commission" to study "the history, nature and pathology of small pox," which movement, thus disguised, was inspired by the opponents of vaccination.

Fortunately two learned physicians, Dr. Schamberg and Dr. Welch head the commission, but its membership contains also the names of such "anti-vaccinationists" as Porter F. Cope and John Pitcairn. They are to report to the legislature by Feburary 1, 1913, so we are in little more than a year hence, to learn, not whether vaccination prevents smallpox; we know that already; but whether the minds of the "antis" are susceptible to a vaccination of facts that shall prevent the further persistence of their folly.

National Conference on Pellagra.

It has probably never happened in any country that the newly recognized presence of a long established disease has aroused such intense interest, general and professional, in so short a time, as is the case with Pellagra, and its problematic cause. In spite of the disbelief in the doctrines that corn, even when unsound, can cause it, the vague uncertainty surrounding the etiology of pellagra has diminished the consumption of maize products by the educated classes to an appreciable extent. The undeniable fact that pellagrins find their symptoms aggravated by a corn diet shakes the faith of even many physicians in its innocuousness.

Now, however, it is proposed to assemble in consultation all the prominent physicians of the entire country in an effort that is to be called the "National Conference on Pellagra." "The National Association for the study of

Pellagra" will hold "its next triennial meeting" in Columbia, S. C., October 3 and 4, 1912.

A circular letter conveying the above information has reached this office. It says that it is expected that several foreign governments and medical organizations will be represented at the conference. "Persons wishing to present papers will please address the special, committee, consisting of Drs. J. W. Babcock, J. J. Watson, and J. H. Hayne, Columbia, S. C."

It is to be hoped that by next October something more about the etiology of pellagra than is now known may have been discovered, demonstrated and accepted.

CORRESPONDENCE

THE REACTION FROM SALVARSAN OF NO DIAGNOSTIC VALUE.

The Editor of the Southern Medical Journal:

DEAR SIR: Martin's publication and your recent comment thereon in the May number of this journal should, in the writer's opinion, not be passed over in silence. As I understand Dr. Martin's views, they are based partly on clinical results and partly on what I believe to be an incorrect hypothesis. One of these latter, as I understand it, is that salvarsan, when injected into a patient actually suffering from syphilis causes, either always or as a rule, a pronounced febrile reaction, whereas in non-syphilitics such injections should not cause such reaction. Martin appears to consider this presence or absence of reaction following the administration of salvarsan of diagnostic value, speaking for or against syphillis in the patient treated. It is clear to me that this view has been accepted by a number of physicians and that many of them are being led astray (with great harm to their patients) through a misplaced confidence in the diagnostic significance of the presence or absence of a febrile reaction following salvarsan injections. The writer has heard Ehrlich himself protest against the claim that salvarsan injections should produce febrile reactions. He stated at the neurological congress in Frankfurt last October that most of these febrile reactions were the result of faulty technique in the administration and the results of many large series, as published, support this contention. Drs. Hume and Logan, of this city, have placed at my disposal a series of their 27 last cases, all certainly syphilitic with the diagnosis proven by the finding of the spirilla of by positive Wasserman, with only 6 febrile reactions (99% or more) following the injection of salvarsan. From the literature, such evidence can be collected in overwhelming amounts. It seems to the writer to be established beyond all question that no diagnosis for or against syphilis should be based on the development or non-development of fever following the injection of salvarsan.

As regards the value of the salvarsan injections in pellagra, it is probably not possible to reach at this time any positive conclusion, and yet the article appearing last month in the Southern Medical Journal is so worded as to indicate that it had already been established as a cure for this disease. Certainly the experience of some other observers does not bear this out, although Martin's results as published are very encouraging. In conclusion the writer wishes to state that, like Ruskin, he believes it "easier to criticise a masterpiece than to execute a daub." He feels that such work as Dr. Martin has been doing with pellagra is most highly commendable, but thinks that the Southern Medical Journal enjoys such esteem among its readers that editorial comment on the value of any treatment or other matter is likely to be accepted at face value. This is his reason for writing in criticism of its comment.

Yours very truly,

New Orleans, La. J. T. HALSEY.

THERAPEUTICS

ALOES.

The high esteem in which aloes has long been held is evidenced by the number of its preparations there being no less than nine official and five unofficial titles of the drug and its compounds in some works on materia medica. Aloes comes in soft, friable, yellowish-brown masses, soluble in water and in alcohol. In moderate doses it causes soft, brownish stools in eight to ten hours, sometimes with some griping. Its effect is expended principally upon the lower half of the large intestine where its frequent use causes irritation sometimes resulting in hemorrhoids. The irritation is accompanied by a determination of blood to the pelvic viscera near the rectum, and in consequence it has been found useful in increasing a too scanty menstrual flow, or in aiding to restore it when functionally suspended. Goodell recommends the following as effectual:

R—Extract aloes.....grains LX (4.0 gm)
Ferri sulphatis exsiccati..drachms II (8.0 gm)
Assafetidae .....drachms IV (16.0 gm)
Misc. fiat pilulae 100.

Signa: One pill after each meal, gradually increased to three.

It is well to begin this treatment about ten days before the menstrual period is due, and on the three nights preceding that date have the patient sit for ten minutes in a tub of water at 120 degrees. An active principle, aloin, is derived from aloes and seems to contain all its useful powers. It is an ingredient, as also is the aloes, of many of the laxative pills placed upon the market by manufacturing druggists. Some of these preparations have their formulae printed upon the label, and are therefore ethical. It is a poor reward for such behavior for the official formulary to place an identical formula upon its regular list, but under another name. The following formula will be found on the labels of pills made by several reliable firms:

R—Aloin .....1-4 grain
Strychnine .....1-60 grain
Extract of belladonna .....1-8 grain
Powdered ipecac .....1-16 grain

This is, of course, for one pill only. It may be ordered in any numbers under the name "Lapactic Pill," or "Pill Evacuant." The official equivalent is the "Compound Laxative Pill." It is an efficient, mild and useful pill, and widely used by the profession, and, to some extent, by the laity. It is not from such preparations, whose ingredients are standard and whose amounts and modes of manufacture are published on the labels, that danger to the laity need be apprehended. It would be puerile for us to expect every person to consult a physician every time he needed a laxative, and if the public would depend upon such preparations for legitimate self-medication instead of buying the loudly advertised secret nostrum, it would be far better for the general welfare.

Aloes is considered contraindicated in persons of plethoric habit, and in women troubled with profuse menstruation.

RHAMNUS PURSHIANA OR CASCARA SAGRADA.

Cascara comes from the Pacific coast, and is an efficient laxative and simple purgative. The solid and fluid extracts are the forms used. It is chiefly used for chronic constipation, the plan of using it being somewhat as follows: A teaspoonful of the fluid extract is taken at bedtime every night, being measured by drops up to sixty. Whether effectual or not the next dose is diminished one drop. If the condition demands its use every night it is claimed that the smaller doses are more apt to succeed than the larger, probably on the theory of spasmodic rigidity of the peristaltic muscles. When the dose has reached ten drops it is gradually increased again to sixty. Its extremely bitter taste is an obstacle to its more general use. It is sometimes given in combination with substances that disguise its

bitterness, such as syrup of sarsa or of rhubarb. The following is useful:

R—Syrupi rhei aromatici.....
.....fluid ounces II (60.0 c.c.)
Fluid extracti rhammi purshiani.....
.....fluid ounces II (30.0 c.c.)
Tincturae nucis vomicae .....
.....fluid drachms II (8.0 c.c.)

Misce. Signa: From half to one teaspoonful night and morning.

Cascara does not so readily lose its effect by being frequently taken, as is the case with many other laxatives. It enters into the composition of several pills kept in stock by druggists for the use of physicians, and adds to their efficiency.

SENNA.

The leaves of senna contain a cathartic principle that has long caused it to rank high among purgative and laxative medicines. It acts in four or five hours, causing soft, yellow stools. Its use is not conducive to subsequent constipation. The chief objections to its use are its nauseous taste and odor and a tendency to cause flatulence and griping. That it is a constitutional and not a local purgative is proven by its causing vomiting and purging when hypodermically administered.

The objectionable features are practically overcome by combining the senna with carminatives. The preparations most used are the infusion, two drachms (8.0 gm.) of the leaves steeped for fifteen minutes in half a teacupful of water for one dose; the infusum sennae compositum, compound infusion of senna, containing senna, Epsom salts, manna, and fennel, prepared first in boiling water and diluted with cold. The dose is 1 to 3 ounces (30.0-90.0 c.c.); confection of senna, a compound of senna with dried fruits and aromatics, dose 1 to 2 drachms (4.0-8.0 gm.); and pulvis glycerrhizae compositus, compound liquorice powder, containing senna, liquorice, fennel and washed sulphur. Also sugar, dose 1-2 drachm to 1 1-2 (2.0-6.0 gm.).

Senna expends its influence principally upon the small intestine, though it causes a hyperemia of the rectum, which renders it frequent use unadvisable by those troubled with hemorrhoids. Many of the proprietary and unethical laxative syrups and so-called liver remedies depend principally upon senna for their efficiency and their untoward effects in unsuitable cases are inevitable.

BOOK REVIEWS

A Handbook of Suggestive Therapeutics, Applied Hypnotism, Psychic Science.

A Manual of Practical Psychotherapy, Designed Especially for the General Practitioner of Medicine and Surgery.

By Henry S. Munro, M.D., Omaha, Neb. Third edition, revised and enlarged. Cloth, $4.00 net. C. V. Mosby Medical Book & Publishing Co., St. Louis, Mo.

We all believe "there is something in" psycotherapy, but how much, or what?—that's the question. The profession generally recognizes the truth that a doctor's professional success is vitally affected by his personal influence with his patients. We know the value of cheerfulness and hope, and constantly try to inspire confidence in our ability. Beyond this few of us go, or would know how to go were we to try. In the book under consideration Dr. Munro undertakes to show doctors how to extend their psychic influence to a degree seldom dreamed of in our philosophy, though sometimes limned in yellow Sunday supplements. His doctrine is founded upon one simple principle—namely: *Whatever you believe about yourself is true if you believe it hard enough.* On page 145 he says: "Anyone who believes that he can do so can easily lie with head in one chair and heels in another and hold up one hundred and fifty or two hundred pounds. The book presents many pleasing anecdotes illustrative of this principle. Also, the acts performed by what is called "telepathy" are given in detail, and many strange and inexplicable feats are described. There is only one way for the man who reads this book to escape becoming a convert to its teachings, and that is to assign Dr. Henry S. Munro to a lofty position in a certain notorious "club" supposed to have been founded by a brilliant ex-President of the U. S. A., who need not be named. But the book is one that every doctor should read, being duly cautious to restrain his acceptance within due bounds. It will pay him well and variously. This is especially true of the aid of suggestion in ether or chloroform anaesthesia.

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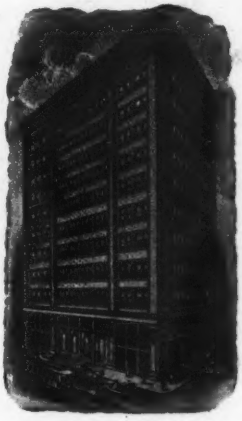

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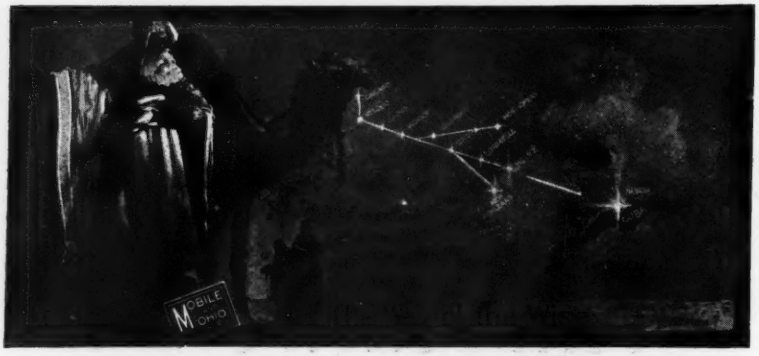

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* * *

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*The name Phylacogen (pronounced phy-lac'-o-gen) distinguishes the modified vaccines manufactured by Parke, Davis & Co. according to the process of Dr. A. F. Schafer.

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